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REFERENCES AND ABBREVIATIONS

Readers in search of a given subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings. Institutions and Corporations with the right to the prefix Royal will be found under that prefix, with the exception of Hospitals, which will be found under that heading; and Medical Societies, which are separately indexed under Societies. All Universities are indexed under the word University. (A.) = Annotation, (C.) = Correspondence, (N.I.) = New Inventions, (L.A.) = Leading Article, (M.L.) = Medico-legal, (M.T.T.) = Modern Technique in Treatment, (O.) = Obituary, (P.I.) = Parliamentary Intelligence, (R.) = Review, (R. and A.) = Reports and Analyses, (A.D.) = Clinical Interpretation of Aids to Diagnosis, (N.P.) = New Preparations, and P. and C.P. = Panel and Contract Practice.

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ADDRESSES AND ORIGINAL ARTICLES

UTERINE HÆMORRHAGE, WITH SPECIAL REFERENCE TO MALIGNANT DISEASE.*

By Beckwith Whitehouse, M.S. Lond., F.R.C.S. Eng.,
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During the year 1929, 4428 women died in England and Wales alone from malignant disease of the uterus. This is the average toll as shown by statistics covering the last quinquennium, the death-rate from this cause amounting to 215 to 220 per million women.

Cancer of Uterus: England and Wales.

Mortality 1925–29.

Year.	Number of deaths.	Rate per million females.
1925	4467	220
1926	4409	217
1927	4428	216
1928	4525	220
1929	4428	215

In the female sex two organs of the body have a greater predisposition to cancer than others. These are the uterus and the breast, and in each the liability is about the same. Indeed, we may even go further and say that in 30 per cent. of all women who suffer from cancer the organ first involved is the uterus.

The earliest, and for that reason the most important symptom of carcinoma affecting the uterus, whether it be cervix or corpus, is almost invariably hæmorrhage. Some years ago Wilson in a series of 328 cases found that uterine bleeding *alone* was the first symptom in 41 per cent. If discharge and pain are included, this figure is materially increased, and hæmorrhage may be regarded as *one* of the earliest symptoms in 65 per cent. of the whole.

As regards curability, uterine cancer occupies a very unfavourable position as contrasted with cancer of the breast. The reason for this is not far to seek; it is that cases reach our hands too late, and by the time that the disease is subjected to treatment, whatever form that may take, it has already generally extended beyond the aid of such therapeutic measures as are available to-day. In 1929, 53 new cases of carcinoma of the cervix passed through my clinic, but of these only three were in a clinical state which might reasonably be expected to be followed by cure. The rest were advanced growths; three-quarters of these women had attributed the hæmorrhage to the menopause, and no local examination of the tissues had been made. I do not believe that this state of affairs is by any means isolated. It still probably obtains throughout the world.

We hear at times a certain amount of adverse criticism of cancer propaganda work and of the development of a state of cancerophobia in the middle-aged matron of to-day. Personally I regard this as a healthy sign and a mark of progress. Without a certain amount of fear we shall not get women, especially of the uneducated classes, to submit themselves to the careful and detailed investigation necessary to ensure a correct diagnosis. We must not forget that to the average woman, uterine hæmorrhage is the least sign of importance to her. She is so accustomed to slight irregularities in the menstrual function, especially at the menopause—and probably she knows many of her friends with similar symptoms who have not died from cancer—that a very strong stimulus is necessary to make her seek advice. The only stimulus that we possess *is* cancerophobia, and for that reason I do not deprecate, I welcome it! Anyone, I am sure, would rather examine 100 women and cure their "phobias" by proving there is no malignant disease present, than be in attendance during the last two or three months on some poor creature who thought that her symptoms were "only due to the change."

It is in this relationship of physiological to the pathological in the matter of symptomatology that the early diagnosis of malignant disease of the uterus is difficult. In the case of the breast we have an organ easily accessible even to unskilled investigation. The smallest nodule is frequently noted first by the patient herself. It does not matter whether pain or even local discomfort is present. She knows the possible risks and she seeks advice at once. In the case of the uterus there is no such plain indication. Even hæmorrhage does not occur until a certain amount of necrosis and superficial breaking-down of the growth is present. Pain itself is *never* an early symptom and by some, I think correctly, is regarded as an indication that the condition is involving the cellular tissues around the cervix either by inflammatory exudate or by direct infiltration by the neoplasm.

The onset of cancer of the cervix is insidious and the symptoms are at first so trivial and late in appearance, that one can easily understand how they are missed when masked by what patient and even doctor may regard as purely physiological phenomena.

In 1927 the Ministry of Health published statistics which showed that although there is no special age predisposition to uterine cancer, the frequency steadily increases until the age of 60 is passed. Contrary to general belief these figures prove that there is no very clearly defined tendency for cancer to occur at the menopause. The liability is increasing with the passing years, but more than this cannot be said. It is, however, important to note that this increasing tendency coincides with a period in life, the menopause, when irregular and increased uterine hæmorrhage, especially in the multiparous woman, is comparatively common, and this renders the diagnosis increasingly difficult. At the commencement and end of sexual life in woman, irregular hæmorrhages from the uterus are common. In the adolescent this as a rule is not very important—and certainly not from the point of view under discussion. But to the woman approaching or at the climacteric, with the chance of uterine cancer ever increasing, these hæmorrhages assume a different aspect, and call for very careful investigation.

The Menstrual Function.

To understand the reasons for this tendency of the uterus to bleed irregularly and severely at the menopause, it is necessary to refer briefly to the physiology of the menstrual function. Within recent years opinions regarding this function of the human female have undergone radical change. To-day, many look upon menstruation as being the clinical manifestation of two phenomena or factors A and B, which normally coincide. During active sexual life, from puberty to the menopause, a ripe ovum is discharged from the ovary about the middle of each menstrual cycle, usually between the twelfth and seventeenth days. The cells lining the Graafian follicle from which the ovum has escaped then rapidly develop into the cystic structure known as the corpus luteum. This gland as its prime function produces a secretion which stimulates growth of the embryonic type of connective tissue cells of the endometrium, and effects a degree of development in that membrane which converts it virtually into a decidua ready for the ovum should it be fertilised. This growth is dependent upon constant stimulation by the lutein hormone, and if it is withdrawn the endometrium necroses. The fine capillaries are ruptured and hæmorrhage occurs from numerous points on its surface. The lutein hormone is generally regarded as being antagonistic to ovulation, and so long as a normal and functioning corpus luteum is present, further development of Graafian follicles is, as a rule, suppressed. Should fertilisation not occur, the stimulus to development of the endometrium is withdrawn by degeneration of the corpus luteum itself. Artificially this state of affairs can be brought about by excising or destroying the corpus luteum present in the ovary a week or ten days before the date of the usual menstrual period. The menstrual function can be initiated or antedated by such means. To a less extent the same thing happens if a mature Graafian follicle is excised, cauterised, or merely if its secretion is aspirated by means of a syringe, proving that the integrity of the endometrium is dependent upon a follicular hormone, whether it is intact or converted into the corpus luteum. In other words, it appears as though the mature follicular cell of the Graafian follicle produces at least one hormone identical with that of the fully developed lutein cell, but that in the fully developed lutein gland the secretion is more concentrated.

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* An address delivered on Nov. 26th, 1930, before the Halifax Division of the British Medical Association in conjunction with the Yorkshire Council of the British Empire Cancer Campaign.

Further evidence upon the nutritive value or stimulating properties of the lutein secretion upon the endometrium has recently been brought forward by H. F. Traut.[1] Traut found that by using a complex medium of tyrode solution, fibrinogen suspension, and sodium linoleate it is possible to grow endometrium in vitro. By adding corpus luteum extract to the medium cellular growth is considerably stimulated, as against controls containing other tissue extracts. Embryonic extract possesses the same stimulating power, derived I believe from the corpus luteum. Indeed I am gradually coming to the view that the corpus luteum hormone not only stimulates the development of the decidua, but that it is also a natural stimulant to all embryonic connective tissues, and that it probably acts as a vitamin to the developing embryo.

The malignant cell itself is embryonic in type and investigations are in progress in the Cancer Research Department of the University of Birmingham to ascertain the influence of lutein and follicular ovarian extracts upon malignant cells. We all know the rapid progress of malignant neoplasms in the young and especially if pregnancy supervenes. Can this tendency to rapid cell proliferation in the embryo and in malignant growths of the child and young adult be due to excess of the lutein vitamin, inherent in the former and acquired in the latter? Many years ago Sir George Beatson pointed out the advantages of double oöphorectomy in some cases of mammary carcinoma, and herein may lie the explanation.

Another interesting fact is that in the human female the two organs most prone to malignant growths are those directly under ovarian influence—viz., the uterus and the breast. Further, when malignant disease does involve the ovary itself the neoplasm is usually characterised by extremely rapid growth, producing immense neoplasms and rapid peritoneal dissemination. This is what would be expected if a natural growth vitamin was produced or concentrated in the ovary.

INFLUENCE OF ŒSTRIN.

If human menstruation was simply the abortion of a useless decidua, the problem of uterine hæmorrhage would be a comparatively simple matter. There is, however, another factor (B) which materially complicates the situation. I refer to the influence of the hormone "œstrin" or the female sex hormone about which so much has been written during the last few years. Menstruation, such as we know it, is accompanied by general and local hyperæmia. It is characterised by secretion of the uterine glands, both corporeal and cervical, and evidence of thyroid activity. The initiation and maintenance of this phase of menstrual activity I attribute to the action of œstrin. The function of œstrin is, of course, to produce a state of œstrus, a provision of nature to promote fertilisation at the next ovulation (post-menstrual). Œstrus, common to most organisms as far as we know, but subject to variation as to time in the sex cycle in different families and genera of the animal kingdom, coincides in the human species with the abortion of the useless decidua. In other words, factors A and B normally synchronise.

The menstrual function has been regarded by some as a preparation for pregnancy. This is correct in so far as factor B, the œstrin factor, is concerned. Others, and not a few lay minds, consider it to be possibly an excretory process. This can only be right if the outpouring of useless calcium and iodine from the uterine glands in the process of menstrual abortion can be so regarded.

What is the source of the sex hormone in the body? It is commonly, of course, supposed to be the ovary and, indeed, is described by many writers and workers as "the active principle of the ovary." The reason for this is that the earlier investigators first described the hormone as a constituent of the fluid follicular contents of the ovary. Later it was found in the ovarian stroma, but *not* in the corpus luteum. It was then discovered that the placenta contained large quantities of the active principle, and to-day, through the work of Loeb, Zondek, Aschheim, and others we know that it is present in many body fluids and organs. The urine of pregnant women contains an abundance of the sex hormone, and essential quantities are also present in the blood, liver, bile, and fæces during pregnancy, in spite of the fact that ovulation is supposed to be suppressed by the corpus luteum! Plants also show the presence of an active principle which possesses a similar action to the female sex hormone. The commercial source of most of the effective œstrin on the market is, I believe, either the placenta or the urine. For these reasons the term "ovarian hormone" appears to be a misnomer.

ŒSTRUS AND OVULATION.

An interesting and important observation of Zondek is that, by means of thallium, it is possible in animals to stop the production of the sex hormone even when follicles with ripe ova showing mitotic figures are present. Therefore, the sex hormone does not control the growth and activities of the ovum. On the other hand, in young animals by the injection of follicular fluid or other sex-hormone-containing substance, it is possible to produce complete œstrus in the absence of any ripe ova. In animals such as the mouse and rat all ova can be destroyed by means of X rays, and yet œstrus can be artificially established by injections of the œstral hormone. Experiments such as these prove conclusively the absolute independence of ovulation and œstrus. In the human female both functions, whilst independent, are coördinated by Nature to promote the highest degree of fertility.

Since both factors coincide, it naturally follows that the hæmorrhage of menstruation, whilst normally resulting both from necrosis and hyperæmia of the endometrium, *may be caused by one factor only.* If œstrus is sufficiently intense the hyperæmic endometrium will ooze independently, whether any necrosis is present or not. Indeed, ovulation may be entirely suppressed, and the individual is, of course, sterile, even though a slight œstral menstrual bleeding regularly occurs. Similarly, œstrus may be entirely absent, and the uterus will still bleed if ovulation takes place, and the endometrium necroses in the absence of fertilisation.

It is important to note, therefore, that a slight uterine hæmorrhage may represent œstrus without ovulation or ovulation without œstrus. Conversely, a long and protracted bleeding can be the result of endometrial necrosis with intense hyperæmia from excessive production of œstrin. If this view is accepted it appears to dispose of the criticisms of G. W. Corner and the late Prof. J. H. Teacher as to the relationship of menstruation to ovulation.

It is remarkable fact in Nature that physiological activity related to the sex function, follows in the majority of organisms, both high and low, a cyclical curve. The basic factors which underlie this phenomenon are unknown. We do know, however, that the general metabolic processes in the human female appear to be definitely related to the cyclical rhythm of the sex function. This is shown by variation in the bodily temperature, the calcium and iodine content of the blood, the pre-menstrual raised ammonia co-efficient, and the basal metabolic rate. The latter is particularly interesting, and one of my students, Dr. K. Roberts, has shown that a curve can be drawn of the basal metabolic rate, which automatically divides itself into four phases corresponding closely to the various stages of endometrial development. At and after the menopause this cyclical rhythm is still maintained for a time in the absence of any hæmorrhagic uterine discharge. Even when uterus and ovaries are removed, the subsequent metabolic curve continues to show the usual menstrual disturbance, although the variations are not so obvious, because the metabolic rate throughout the cycle is continually high.

If an artificial menstrual period is initiated by destruction of a mature Graafian follicle or developing corpus luteum a disturbance of the basal metabolic rate is produced, which is typical of that described as normal for the natural function. Also, at the time in the cycle when menstruation would normally have occurred, had no surgical interference taken place, a second typical menstrual rise and fall occurs, although unaccompanied as a rule by any uterine hæmorrhage. At the actual menopause ovulation is commonly frequent, irregular, and patchy, and this is reflected by marked variations in the metabolic rate.

How far is it possible to correlate these various observations and experimental facts with clinical data in relation to malignant disease of the uterus?

Post-menopausal Hæmorrhage.

As a woman approaches the menopause, and for some years after, the tendency to cancer of the uterus increases. Also, as the menopause approaches, the discharge of healthy ova from the ovary becomes irregular. Some ova fail to mature, and others take longer than the usual 14 days. In some cases an ovum ripens only at intervals of months; and occasionally a belated reproductive cell does not mature until two or three years have passed after the apparent cessation of the menses. Whenever such an ovum ripens and escapes from its follicle a corpus luteum develops in the corresponding ovary, and the *endometrium finally necroses with the production of* bleeding.

I have seen a recent corpus luteum in the ovary from a woman aged 67 removed with the uterus on account of post-menopausal uterine hæmorrhage where cancer was suspected but non-existent. Many of these occasional post-menopausal hæmorrhages can probably be explained by delayed or late ovulation. In itself, uterine hæmorrhage due to this cause is quite harmless, but when it occurs it generally necessitates a diagnostic curettage owing to the possibility of the bleeding being caused by an early carcinoma of the uterine body.

The type of hæmorrhage, however, commonly gives quite useful diagnostic information, that caused by late ovulation being in character and duration very like an ordinary menstrual period. Some patients note this themselves. The bleeding from a uterus, the seat of carcinoma of the corpus, is smaller in amount, bright red, and more prolonged. It is a slight irregular or continuous blood-stained discharge rather than a single short solitary hæmorrhage. The occurrence of such a continued or intermittent red discharge in a woman over the age of 40, whether nulliparous or multiparous, is always a most dangerous symptom. It is a matter of no concern whether the uterine body is enlarged or not, for carcinoma affecting this site occurs in at least two well-defined pathological types. In one the growth produces a tuberous type of neoplasm with greater or less uterine enlargement. This is the more common type, and bleeding is not infrequently absent until the neoplasm has made considerable headway in involvement of the uterine wall. Even when it does occur it is so slight that patients often do not seek advice until the discharge has been present for several months. A short, sharp hæmorrhage, the result of late ovulation, is much more likely to bring a woman under medical observation *than this trivial blood-stained discharge* associated with a developing cancer of the uterine body. We cannot, therefore, give better advice than to impress upon every woman the supreme importance of obtaining advice immediately she notices *any* blood-stained discharge from the genital passage, no matter how slight, once the menses have ceased.

In the second and rarer pathological type the neoplasm assumes a papillary form, either diffuse or localised as a polypus. Here, again, the type of hæmorrhage is an irregular or continuous blood-stained discharge, but it occurs earlier and the discharge contains more blood. Such types although rarer are seen earlier, because hæmorrhage is more pronounced. In both, clots are rarely a feature of the bleeding until the growth has reached such dimensions that diagnosis is an easy matter. On the other hand, clots are not infrequently passed when hæmorrhage is associated with non-malignant conditions of the uterine body.

ADENOMATOUS UTERINE POLYPUS.

There are several conditions which cause post-menopausal hæmorrhage quite apart from late ovulation to which I have referred. One is the simple adenomatous mucous polypus of the endometrium. This occurs at all ages from puberty onwards. I have removed one from a girl of 19 and another from a woman of 83. I am much interested in these little uterine polyps and have often thought over their genesis. A polypus of simple type is a localised endometrial hypertrophy. Now hypertrophy of the endometrium is associated with what may be termed diminished intra-uterine tension. Under normal conditions—i.e., in the healthy uterus—the uterine cavity is practically non-existent owing to approximation of the anterior and posterior walls. With the development of pro-œstrum and swelling of the pseudo-decidua the intra-uterine tension is naturally increased, and this tension is not released until necrosis of the superficial layer or stratum compactum has occurred.

In certain pathological states the uterine cavity remains permanently enlarged, and the intra-uterine tension is correspondingly lower. In a uterus the seat of chronic subinvolution, for example, the uterine cavity is increased in all dimensions. The result is a uniform overgrowth of the whole of the endometrium until the cavity is obliterated and presumably the intra-uterine tension is again raised to the normal level. The same thing occurs in a uterus where the cavity is enlarged and distorted by multiple interstitial and submucous fibromyomata. Where the walls are in contact the endometrium is of normal growth or atrophic. Whenever a cavity is produced, however, the endometrium either undergoes diffuse growth or develops a polypus in an attempt to obliterate the same. It seems as though the organ abhors a vacuum, and therefore the normal intra-uterine tension probably exerts a not unimportant influence upon the degree of regeneration of the endometrium which ensues upon the termination of the pseudopregnant state. This tension is normally maintained by the tone and state of development of the uterine muscle. Diminished tone will favour endometrial overgrowth. The genesis of the simple adenomatous polypus appears therefore to be intimately associated with this same factor of tension. Not only is the major factor of intra-uterine tension as a whole involved, but also the local tissue tension. This naturally varies with the periodical growth of the endometrium dependent upon the ovarian hormone, and the amount of molecular necrosis which occurs at the end of the menstrual cycle. If the necrosis is irregular and patchy, as is frequently shown by curettings to be the case, the subsequent regenerative phase must introduce local variations in tissue tension, which find their expression in corresponding overgrowths. Once this pathological process is initiated a vicious circle is produced which will tend to be perpetuated, and may introduce by the same method the element of malignancy. Indeed several polypi have been removed which actually show a transition from simple to malignant characters.

When these simple polypi develop before the menopause, as the majority do, they commonly exhibit pre-menstrual congestion or actual superficial necrosis *after* the rest of the endometrium has passed into a state of post-œstrum and is undergoing a process of regeneration. A polypus, under such conditions, might almost be said to represent a state of post-maturity, and as such is a causative factor of menostaxis or prolonged menstrual hæmorrhage. Occasionally necrosis does not occur until the termination of the normal hæmorrhage from the rest of the endometrium. The bleeding is then apparently metrostaxic, although in reality the basis of the hæmorrhage is laid during the preceding menstrual cycle. Post-menopausal hæmorrhage from a simple adenomatous polypus appears to be the result of simple venous congestion due to constriction of the pedicle by increasing fibrosis.

VALUE OF CURETTAGE.

The type of bleeding which an adenomatous polypus produces is very similar to that from an early carcinoma of the uterine body. It is a blood-stained discharge with in some cases a rather more severe bleeding which frequently first brings the patient under observation. Unless the polypus is actually protruding through the cervical canal, and appearing at the os externum, the actual diagnosis can only be made by means of the curette and the microscope. The same applies to such other causes of post-menopausal hæmorrhage as papilliferous adenoma, and so-called senile endometritis. Indeed, in practically every case of post-menopausal hæmorrhage the only safe course to adopt is careful exploration of the uterine cavity, should the cause of the bleeding not be obvious from a preliminary investigation of the lower genital tract and the cervix uteri. The only exception that I would make, and I agree that this is open to criticism, is in certain cases where a single short hæmorrhage occurs, menstrual in type and character, and not repeated. Such a symptom *may* be due to late physiological activity of the sexual system or to a sudden flushing of the senile endometrium from certain general causes. In some few cases of hæmorrhage that conform to this type I have postponed diagnostic exploration of the uterine cavity and, as circumstances subsequently proved, correctly. I have always felt, however, that I have been playing with fire, and whenever real doubt exists I do not like to *think*. I like to *know*, and this attitude of mind generally decides the policy.

Criticism has been raised by some as to possible risk in a diagnostic curettage of disseminating the growth, and the suggestion has been made that the discharge itself should be examined for the presence of malignant cells as a safer alternative. I have tried this method of aspirating the uterine cavity and examining the contents of the pipette, but in my experience it is unreliable. Furthermore, I believe that the supposed danger is theoretical, and I know of no instance where dissemination of a corporeal growth can be definitely laid at the feet of a previous diagnostic curettage. Sometimes, in the ordinary course of dilatation of the cervix, fragments of tissue from a friable growth escape from the cervical canal. These are quite sufficient for the purpose of diagnosis, and there is no necessity to proceed and scrape the whole of the uterine wall to obtain more material. Curettage at all times should be a delicate operation, and when carcinoma of the uterine body is suspected, very careful handling is required. The uterine wall in some elderly subjects is as soft and friable as wet blotting-paper, and the heavy hand can do much damage. The same applies to the casual use of the uterine sound, an instrument which should be discarded where the question of the diagnosis of uterine cancer is concerned.

Menopausal Hæmorrhage in Relation to Uterine Carcinoma.

Post-menopausal hæmorrhage, therefore, need not necessarily be associated with any great difficulty in diagnosis once the case comes under observation. All bleeding of this type is abnormal and every case calls for very careful scrutiny. The diagnosis should be carcinoma, until the contrary is proved. During the years of the menopause itself, however, difficulties constantly arise, owing to variations in the normal menstrual function. Some of these variations have a purely physiological basis; others are associated with local uterine or ovarian lesions.

EPIMENORRHŒA.

As a woman approaches the end of her sexual life, local changes take place in the uterus and ovaries which favour the occurrence of abnormal hæmorrhage.

To take the ovaries first; these organs have discharged the majority of their germ cells, and the few that remain either do not mature or escape at irregular intervals. Sometimes several ova are discharged at the same ovulation, as shown by the presence of more than one corpus luteum. In some women there appears to be a speeding up of ovulation at or about the age of cessation of the reproductive function. This "mass production" of reproductive cells causes a temporary increase in fertility, and in certain cases the one and only pregnancy occurs at this time. Irregularity in the maturation and discharge of ova at the menopause is reflected by corresponding alternating periods of amenorrhœa and hæmorrhage on the part of the uterus. This irregularity is intensified in some cases by the fact that œstrus and ovulation appear not to synchronise as normally. Such women experience two short periods in the cycle, the natural rhythm being upset. It is not surprising, therefore, that confusion should arise in the early diagnosis of carcinoma of the uterus. Women know that the menopause is at times characterised by irregular bleeding of this type, and therefore, unfortunately, they do not take mere alteration in rhythm as a serious symptom.

Irregularity in function is, however, not the only anomaly of menopausal hæmorrhage. Two other types of bleeding are of frequent occurrence. One is "flooding," or what we may call a true "menorrhagia." The other is a prolonged bleeding which may not be serious as a symptom, but which *in itself* is more dangerous, as it closely resembles the type of hæmorrhage from a carcinoma of the cervix. This type of bleeding I label under the term "menostaxis."

MENORRHAGIA.

Menorrhagia or "flooding" appears to be the result of a local atrophy or in some cases an inflammatory reaction of the uterine wall, both muscle and endometrium. The normal muscle is replaced by fibrous tissue, and the contractile power of the organ is seriously handicapped. Inasmuch as muscular contractions play an important part in controlling the uterine circulation at each menstrual abortion, fibrosis of the organ is associated with severe menstrual hæmorrhage, amounting sometimes to serious "floodings." In the multiparous woman, with a uterus enlarged by chronic subinvolution, menorrhagia at the menopause is very common, and since the bleeding is severe, such patients usually seek advice at an early date. If the cervix happens, in addition, to be deeply lacerated, the lips everted, thickened, hard, and irregular from chronic inflammatory fibrosis, I can well understand how difficulty in diagnosis arises. Further reference to this type of cervix will be made, but at this stage I would have you *note that a true menorrhagic type of* bleeding at the menopause, or in common parlance "flooding," is not usually associated with carcinoma of the cervix—certainly not in its early stages. Patients with fibrosis uteri associated with irregular and severe uterine hæmorrhage usually pass large clots in the discharge, and soon show a greater or less degree of secondary anæmia. This is not so with carcinoma of the uterus, either body or cervix, in the early stages of the disease when diagnosis is difficult. In the late stages the local physical signs are so marked that the diagnosis is obvious.

MENOSTAXIS.

The third type of menopausal hæmorrhage, the lengthy or drawn-out menstrual period—*menostaxis* as I prefer to call it, is a much more important symptom in the diagnosis of uterine carcinoma. It, indeed, very closely simulates the paroxysmal bleeding from an early malignant neoplasm of the cervix.

The cause of menostaxis at the menopause is, I believe, partly associated with the presence of dead and immature ova in the ovary (fibrocystic ovaries) and partly with local abnormalities in the endometrium. It is possible to produce this type of uterine hæmorrhage artificially by destroying partially mature Graafian follicles in the middle of the menstrual cycle. It frequently occurs clinically when a diseased uterine appendage is removed or partial oöphorectomy performed.

The normal relation of the endometrium to the control of hæmorrhage is somewhat complicated. I take the view that both stroma and glands of the uterine body have a part.[3] Clotting is promoted by the presence of thrombokinase in the cells of the stroma and this thrombokinase is liberated as the normal endometrium breaks down. Necrosis also sets free the pent-up secretion in the glands of the uterine body running obliquely in its walls. The secretion of the glands contains a thrombolysin, which dissolves the "menstrual clot" or abortion, and facilitates its removal in the form of the menstrual "lochia."

At the menopause the endometrium is either atrophic, or in the case of the subinvoluted uterus, hypertrophic. In either event a factor is introduced which tends to make such menstrual bleeding as occurs both severe and prolonged. If the endometrium is atrophic or fibrosed there is no mechanism to control bleeding. Thrombokinase is deficient and a local state of hæmophilia exists. On the other hand, if the endometrium is hypertrophic, the normal and natural necrosis is patchy and on a very extensive scale, and a large amount of thrombolysin is discharged by the uterine glands. In either case the menstrual hæmorrhage tends to be considerably prolonged. If such a local condition of the uterus is complicated by irregular ovulation, the clinical picture very closely resembles that presented by carcinoma of the cervix uteri.

METROSTAXIS.

It is true that careful scrutiny of the symptom will sometimes give a lead in the matter of fine diagnosis in these difficult cases between a benign and a malignant cause of bleeding. The occurrence of so-called menstrual molimina or those symptoms associated with the "negative phase" of the menstrual cycle for example, naturally suggest that irregular and prolonged hæmorrhage may be the result of uterine "insufficiency" rather than a neoplasm. Similarly, if it is possible actually to investigate the discharge, the colour and other characters may be *more typical of the menstrual lochia than the hæmorrhage* from a cervical carcinoma. From a practical point of view, however, such diagnosis based on symptoms is rather too theoretical and "hair-splitting." The problem at stake is too serious to gamble upon possibilities, and the only straight and safe course to adopt is to insist upon a local, and if necessary, microscopical examination of the cervical tissues in *every* case of irregular bleeding from the uterus.

I do not want to suggest for one moment, because I have ventured to analyse the types of hæmorrhage that occur at the menopause, and to attempt an explanation of the manner of their genesis, that I do not lay stress upon the importance of a local pelvic examination whenever suspicion arises. And this local examination must not in any way be superficial. At its conclusion we must be able to say definitely, without doubt or equivocation, that the patient has not a malignant growth of her uterus. This is not always easy without the aid of anæsthesia, especially in the case of those early intracervical neoplasms growing in relation with the supravaginal cervix. The tissues of the vaginal cervix are not always hard or indurated when a supravaginal carcinoma exists. Neither is the os externum always irregular or its edges friable. If, however, on combined bimanual rectovaginal abdominal examination the cervix appears to be unduly bulky or "barrel-shaped," no time should be lost in dilating the cervical canal and exploring digitally, or perhaps with the curette, the tissues of the supravaginal cervix. In some instances of a neoplasm in this situation, the vaginal cervix when exposed by a speculum appears to be almost atrophic and cicatrised.

Coitional Hæmorrhage.

I have now referred in general terms to four types of uterine hæmorrhage, associated with the menopausal and post-menopausal epochs in relation to uterine carcinoma: epimenorrhœa, or too frequent periods; menorrhagia, or excessive periods; menostaxis, or prolonged periods; and metrostaxis, or hæmorrhage unassociated with menstrual factors.

In connexion with the latter there is one form of uterine bleeding which, in conclusion, I wish to emphasise as being a most important, perhaps the most important, diagnostic sign of all. I refer to the hæmorrhage which occurs as a direct result of coitus. Coitional hæmorrhage must always be regarded with the greatest suspicion. It is true that a blood-stained discharge, or in some cases slight actual hæmorrhage sometimes follows coitus, when the cervix is the seat of an extensive erosion and ectropion, or when a simple polypus is projecting through the os externum. A severe bleeding associated with coitus, is, however, nearly always evidence that cervical carcinoma exists, and a very careful examination of the cervical tissues is demanded. A bimanual investigation of the uterus and appendages is first conducted, and the consistence, shape, and size of the uterus, both corpus and cervix, noted. The cervix is then thoroughly exposed by means of a speculum, preferably Sims's, or one of its modifications, and with the aid of good illumination the tissues carefully inspected.

If a polypus is present it is twisted off and sent to a pathologist for report. If an erosion or ectropion is seen, the surface may be lightly touched with a dressed Playfair probe. In the case of the "papillary" type of erosion, oozing of blood is readily produced by such means from the bright red granular surface. It occurs, however, from numerous points and is slight in amount. From a carcinomatous ulcer or early "cauliflower" growth the hæmorrhage on contact is much more free, and the cervical tissues darker in colour. When the cervix has suffered severe trauma during parturition it is not uncommon for the torn lips to undergo considerable hypertrophy and eversion. This condition of ectropion, frequently associated with a hypertrophic adenomatous state of the cervical epithelium, which bleeds slightly on contact, closely simulates cancer. The tissues, however, are not friable. Should any doubt exist, the correct procedure is to proceed at once to a biopsy. Vernon Bailey,[2] in an excellent piece of work, has recently shown the very close relationship that exists between erosion and ectropion of the cervix and malignant disease. Both these condition are entitled to a well-earned position in that community of suspicious characters comprised by th term "pre-cancerous states," and as such are deservin of more respect than is sometimes accorded to them Amongst maternal disabilities I place ectropion o the cervix high in the list, and my own practice i either to amputate or repair by the Schroeder o Sturmdorf technique any cervix which presents a all a gross lesion of this type.

I will conclude with the same theme with which I began—viz., the importance to-day of continuing to impress upon all women of advancing years the danger they incur of neglecting irregular, frequent, or continued hæmorrhage from the genital tract, however slight it may appear. Let us not be afraid of developing a state of cancerophobia, but rather deliver a renewed attack upon that pernicious lay doctrine that all such symptoms are probably "only due to the change." I personally cannot forget that stream of inoperable uterine cancers that recently passed through my clinic in the short space of only 12 months because the unfortunate women held this belief.

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SURGICAL TRAUMA AND CONVALESCENCE.*

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SURGERY, however successful it may be from the point of view of the eradication of disease, must of necessity be associated with some injury to the patient in the process of effecting a cure. The degree of injury inflicted undoubtedly influences the rapidity of recovery, because although the wound heals and the patient leaves his bed, an interval, often a considerable one, elapses before he is able to return to work, while a still longer period elapses before he is absolutely fit again. This period of delayed convalescence is greater in women than in men, and in nervous subjects than in placid or normal ones.

Convalescence may be divided into two stages: a primary stage, extending from the time of the operation to the time when the patient begins to return to ordinary life, and a secondary stage, from this time until complete fitness is attained. Delay in convalescence, whether primary or secondary, is due to two particular factors: first, the actual amount of injury inflicted at the operation, and second, what may be termed psychological or nervous factors. It is obvious that recovery from extensive abdominal operations is slower than from operations on the extremities or simple abdominal operations. The psychological or nervous factors are much more difficult to define, but an operation is undoubtedly associated with an "insult" to the nervous system.

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Preliminaries of Operation.

Any operation is preceded by a perfect array of unpleasant preliminaries, many of which might be avoided. First comes the full dose of castor oil, which nurses at any rate consider to be quite essential. This over-stimulates the intestinal wall, produces congestion of the mucosa, and dehydrates the patient. My own experience indicates that there is much less post-operative discomfort from distension of the intestine with gas when no violent purge has been administered. Second comes the period of pre-operative starvation, beginning usually at 4 or 5 P.M. on the day before operation. As a matter of fact, patients need both sugar and water in considerable quantities in this period and, except in cases of pyloric obstruction associated with dilatation of the stomach, fluid should be given up to two hours before the operation. If the patient is in urgent need of fluid and sufficient quantity cannot be given by the mouth, rectal administration may be used. The most satisfactory way of giving sugar is in the form of barley-sugar or glucose lemonade.

The patient should, if possible, have an absolutely undisturbed night before the operation. The toilet of the abdominal wall should be completed in the early evening, and a mild sleeping draught, such as bromide and aspirin, should be given so that he may not lie awake brooding on the supposed horrors of the morning. Fear of the operation and of the anæsthetic is a very real thing with the majority of patients, though few would confess it. In particular, they complain of the dread of being suffocated by the anæsthetic, a fear that, unfortunately, has more than a basis of truth, as it often arises from actual unpleasant experiences with gas when in the dentist's chair. Patients need reassuring on this point, but especially they need the pre-operative sleep which should on no account be disturbed at an early hour.

The last straw, especially after a disturbed night, is the effort of preserving a brave and often cheery appearance in the anæsthetic room or while waiting on the operation table for the anæsthetist to prepare his apparatus, try on the mask, and fill his bottles.

When one considers the pre-operative treatment in this light it is readily apparent that unwise preparation reduces the vitality of the patient, increases the liability to post-operative shock, and gravely affects the condition of the intestinal wall in abdominal operations, while the nervous strain will undoubtedly prolong the second stage of convalescence and in some cases even produce a permanent neurasthenia.

Abdominal Insult.

There is, in addition, another subtle nervous factor in abdominal operations, a much less understood process which can only be referred to as an "abdominal insult." A mere exploratory operation, when nothing is done beyond opening the peritoneal cavity and examining some of its contents, is often followed by a period of convalescence which in both its primary and secondary stages is equal in length to a convalescence after some major operation. On the other hand, some appendicectomies performed through small incisions are followed by a very short convalescence. Perhaps the shortness of the incision and the absence of any extensive manipulation of the abdominal contents are physical factors which may account for the difference, but the after-effects of the "look and see" type of operation should deter any surgeon who considers the well-being of his patients. Even such a simple operation as an appendicectomy, if it is performed without some definite and well-proven lesion of the appendix, is likely to be the starting-point of a train of symptoms which may be difficult or even impossible to cure.

Every surgeon is familiar with the lady with two or three or more scars on her abdomen, who comes in all eagerness for yet a further operation. If he consents he is merely storing up trouble for himself in the future and breaking one of the cardinal rules of medicine—"Thou shall do thy patient no harm." To such people an unnecessary abdominal operation is a real calamity, since it confirms them in their subconscious view of the physical reality of their complaints, and immensely complicates, if it does not actually wreck, their chance of future well-being.

Many physical factors are, of course, concerned in surgical trauma. Such things as imperfect hæmostasis or devitalisation of muscle lead to the entrance of toxic substances into the circulation; while rough handling of the abdominal wall by retractors, pulling on the viscera, and crushing or pinching of bowel stimulate the sympathetic nerves. These are well-known causes of surgical shock, but fortunately not every operation is followed by surgical shock to a recognisable degree. Even when great care and gentleness are displayed, however, there must be some absorption from the wound and some over-stimulation of the sympathetic.

Severe operations on the upper abdomen, such as gastrectomies, are always associated with a very considerable amount of shock unless care is taken to avoid the more obvious causes of surgical trauma, and unless such precautions as nerve-block or infiltration of the splanchnic nerves are undertaken.

After-treatment.

Even when there is no recognisable degree of shock the patient should receive treatment directed towards combating it. The bed should be warm, a rectal saline containing 5 per cent. of glucose and grs. 20 aspirin should be given, and if pain or restlessness are present they should be relieved by an injection of morphia or omnopon. The treatment during the primary stage of convalescence is very important. Many surgeons seem to be obsessed with the likelihood of their wounds bursting open, or at any rate, producing a post-operative hernia. On this account patients are kept on their backs and tight bandages are applied to the abdomen. To maintain this sort of position for the ten days or so which are supposed to be necessary for the complete healing of the wound must be a strain on the fortitude of the hardiest. An abdominal incision should be so constituted as to obviate as far as possible any accident of this sort and, provided the peritoneum is accurately sutured and nerves supplying muscle or portions of muscle are not divided, there should be no danger of a post-operative hernia.

The natural processes of repair seal off the peritoneal cavity in 48 hours. During the first 48 hours the patient will naturally remain as quiet as possible, partly from weakness after operation and partly on account of the pain which follows movement. Bandages during this period should be sufficiently tight to give the patient full support during vomiting (should that occur) or during coughing, but not tight enough to produce an uncomfortable feeling of constriction. They may require adjustment twice in the day, as in the second 24 hours a amount of abdominal distension from gas is the usual occurrence. We have all grown up with the idea that bandages should not be altered unless the patient finds them absolutely intolerable, or until the abdomen is stretched almost to bursting point. This is, of course, absurd. After the first 48 hours the patient should be allowed to move his limbs in bed, and in the great majority of cases, unless he is being nursed in the Fowler position on account of peritonitis, should be allowed to spend periods of time lying on one side or the other, suitably supported with pillows to the back. Encouragement of movement in bed and deep-breathing exercises will do much to prevent that stagnation in the femoral and iliac veins which predisposes to the formation of a thrombus and to subsequently pulmonary embolism.

Just as castor oil before operation should be avoided because it depletes the patient of important body fluids and because the distension of the bowel by gas often makes manipulations more difficult than they ought to be, so it should be avoided in after-treatment. The regular use of an intestinal lubricant such as liquid paraffin combined with phenolphthalein or cascara, as soon as post-anæsthetic vomiting has stopped, will obviate the use of castor oil. A turpentine enema after 36 hours is usually successful in obtaining an action of the bowels, and a rectal tube should be passed before the enema if meteorism is at all marked.

Perhaps the most important factor in expediting recovery is the use of massage or bed exercises. Many patients when they have spent ten days on their backs suffer from a mild sacro-iliac strain which causes an unpleasant, dull pain in that region. This is almost certainly due to a straightening out of the lumbar curve. It will be avoided if the patient is nursed on the side from time to time, or if the back is massaged. A patient who has been confined to bed for 16 days after an operation on the upper abdomen, but has had regular massage to the back and limbs, should be able to walk as soon as he puts his feet to the ground. Too many patients regard massage as a luxury they think they cannot afford, but they would more than save the masseur's fee in the reduced time they would have to spend at a seaside hydro.

Pre-operative Medication and Choice of Anæsthetic.

I believe that we can save our patients a great deal by the use of suitable pre-operative medication. Morphia, or morphia and hyoscine, will usually allow the patient to go to the operating theatre in a semi-drugged condition in which he does not care very much what happens. Nevertheless, while the drug is taking effect he is still fighting the fear of the unknown.

I have been greatly impressed during the last year, in my own practice, by the narcotic avertin. It was originally claimed for avertin that it would produce complete anæsthesia. This is an over-statement, because it is always necessary, if safe doses are used, to combine it with a local anæsthetic or with gas and oxygen, or both. Why, then, use avertin? Because, if it is successfully given, the patient will go to sleep in bed quite naturally and, if necessary, entirely unaware that the operation is going to take place that morning. My own custom with very nervous patients is to obtain the patient's consent to operation and to ask him to leave the actual day and time in my hands, and then to inform no one in the ward except the ward sister. In the course of the pre-operative treatment the patient receives each morning a rectal injection of normal saline, but on the morning fixed for operation avertin is substituted; the patient is completely deceived and, furthermore, experiences no unpleasant effects in going off to sleep. The technique has been elaborated by Dr. I. N. Lewis, whose valuable assistance as anæsthetist I have had at St. Andrew's Hospital, Dollis Hill. The dose of avertin is calculated as 0·045 g. per pound of body-weight, and about two-thirds of this dose is run in as quickly as the patient will tolerate it. This usually takes 5 minutes. After 10 minutes the patient is tested for replies to questions, and again after 15 and 20 minutes. Between these three times Dr. Lewis has been able to judge very accurately the reaction of the patient to avertin. In general, drowsiness at 10 minutes indicates susceptibility, between 15 and 20 minutes is normal, and longer than 20 minutes indicates resistance. A supplementary dose is then run in, its quantity depending upon the estimation of the patient's requirements made from the previous observations.

In some instances only local infiltration with novocain was used in addition to the avertin, but more satisfactory results were obtained when the avertin was supplemented by gas and oxygen. In no case was it necessary to use ether or chloroform, and the almost complete absence of post-operative vomiting was most satisfactory.

The cases upon which it has been tried have been principally thyroids, and many of the patients have not known that the operation has been performed until they have discovered bandages round their necks later in the day. Brief details of three cases of exophthalmic goitre may be of interest.

A nervous young woman of 20, suffering from exophthalmic goitre, had a basal metabolic rate of + 48 and required a large dose of avertin (6 g.). A bilateral partial thyroidectomy was performed and she made a satisfactory recovery from the immediate effects of the operation. Thirty-six hours later, however, she bled into the cavity, owing to the slipping of a ligature. Under the pretext of giving her a saline, a dose of 5 g. of avertin was run in, an allowance of 1 g. being made for non-excretion of the previous dose. She passed into a quiet sleep and was removed to the theatre, the bleeding point was ligatured, and to this day she is unaware that she made anything but an uninterrupted recovery.

In the other two cases, some months before thyroidectomy, the tonsils had been removed under avertin and gas and oxygen anæsthesia. A prominent feature of that episode was the absence in each case of any soreness of the throat. So pleased were the patients with their experience on that occasion that, although both were very definitely hyperthyroid, they came back for the major operation with gratifying equanimity and both made splendid recoveries.

Avertin, therefore, entirely abolishes the fear of going to the theatre and the unpleasant nature of the induction of a general anæsthetic.

While the idea of some form of rectal anæsthesia is by no means novel, avertin has a great advantage over its predecessors (rectal ether and paraldehyde). These were not without danger, either locally to the mucosa of the rectum or to the patient's general condition, and both are associated with an unpleasant post-anæsthetic odour. Provided that avertin is only used in sufficient doses to produce sleep and some degree of analgesia, it is devoid of these drawbacks. A further advantage is that post-operative vomiting is very considerably lessened. This is probably due to the fact that it is never necessary, even in abdominal operations, to supplement gas and oxygen with either ether or chloroform, and many patients complain that it is the persistent odour of these two substances that nauseates them. Out of a personal series of 20 thyroidectomies and ten other operations, 25 cases were entirely without post-operative vomiting, and in all the rest it was very slight.

If avertin is so satisfactory, why is it not more generally adopted? It requires the attendance of the anæsthetist half an hour before the operation and, as the patient continues to sleep for several hours after it is over, it is advisable for a nurse to be in fairly constant attendance. These, however, are only objections to its use in hospital work, and not in private practice.

Many things, kind and unkind, have been said about nursing homes and institutions. The doctor must remember that he leaves his patient entirely at the mercy of the nurse who chances to be in charge of that particular room, for whereas the patient can choose his doctor or his surgeon, he cannot, as a rule, select his nurse. I do not mean to infer that the majority of nurses are not good, or that they are not in the main models of sympathy and of tact, but a nurse who may be entirely suitable for one patient may drive another to the edge of a nervous breakdown. Nurses may be tyrannical or merely uncongenial, and occasionally they are not experienced in a particular type of case and are, therefore, inefficient. It may be stated as an axiom that you should distrust and avoid nursing homes where you are never left alone with your patient.

There is, therefore, in some cases, a great deal to be said for the patient's having an operation performed in his or her own home where a selected nurse may undertake the after-care. To suggest operating in a private house seems rather heretical for a surgeon who surrounds himself with all the modern aseptic ritual, but, after all, very good surgery was done in the war under much more difficult conditions than are found in a good-class modern house, and a surgeon should be prepared to make some sacrifice of personal convenience and even be prepared to face actual strain in improvising and operating under not quite perfect conditions in order that the patient may have the inestimable advantage of recovering in congenial surroundings.

Of course, in some cases it is a blessing for the harassed mother of three or four children to be removed to a nursing home for an operation, but this merely serves as an example that nothing in medicine or surgery can be laid down as an unbreakable rule.

Practitioners do not usually err in submitting their patients too early to operation, but when they have decided that an operation should be performed, they must remember, in their management of the case beforehand, to do everything that is possible to lighten the ordeal for their patient. By so doing they will undoubtedly shorten the second stage of convalescence and, should their pre-operative diagnosis have been correct, will have a grateful rather than a neurasthenic patient to deal with afterwards.

BOMBAY MUNICIPAL HOSPITAL.—The report for 1929–30 of the King Edward Memorial Hospital and the Seth Gordhandas Sunderdas Medical College, Bombay, states that the constant overcrowding of the wards has necessitated this increase of the beds from 334 to 354. Of the 8575 in-patients under treatment during the year 3690 were cured, 2775 were discharged relieved, 865 "either absconded or left the hospital against medical advice," and 917 died—270 within 24 hours of admission, 165 after 24 hours and within three days, and 481 after three days; one was a stillborn child. The need of an infirmary for chronic and nervous cases is illustrated by the fact that 200 patients had to be kept in the hospital for a period exceeding two months, as against the average stay of 15 days. There is insufficient space and staff for dealing rapidly with the growing number of out-patients.

MUTATION AND PATHOGENICITY EXPERIMENTS WITH B C G.

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(ILLUSTRATIVE PLATE.)

THE strain of *B. tuberculosis* known as "Bacille Calmette-Guérin" (B C G), isolated in 1906 and cultivated by Calmette on a glycerin-bile-potato medium until it appeared to have lost its original virulence, has been used widely, particularly since 1924, for immunising children and cattle against tuberculous infection. This organism has been the subject of extensive investigation in Europe and America. The enormous mass of literature on the subject need not be reviewed here; it has been partially reviewed and criticised by Calmette (1928), Gerlach (1930), and others. The great majority of the reports, from both the clinical and the experimental points of view, have been favourable—the general conclusion being that B C G is non-pathogenic for experimental animals and for humans, and that inoculation with it brings about an increased resistance to subsequent infection with *B. tuberculosis*, even if it does not confer absolute immunity.

Wilbert (1925) obtained remarkably good results in the immunisation of monkeys with B C G, but Griffith (1930), on the contrary, concluded that "vaccination with B C G has failed to protect monkeys against a virulent experimental or familial infection."

A few investigators, notably Petroff, Branch, and Steenken (1929), Watson (1928, 1930), and Lignières (1928) have found B C G to be more or less virulent, and have pointed out the possible dangers associated with the use of a living vaccine. Furthermore, they do not consider that the results so far obtained justify the extensive application of the vaccine in humans and in cattle. Watson (1928) concludes that B C G "is capable of causing in some guinea-pigs, after a long period of infection and tolerance, a progressive and fatal tuberculosis, which then becomes reinoculable and transferable from animal to animal in serial passage." Petroff, Branch, and Steenken (1929) have succeeded in dissociating B C G into "R" and "S" types; lesions produced by the "R" colonies have a tendency to heal, and may disappear in two or four months. The "S" colony invariably produced progressive tuberculosis in guinea-pigs and occasionally in rabbits. Gerlach (1930), using an "S" strain isolated by Petroff, has been unable to confirm his results. Kirchner (1930) has found that B C G may be virulent for guinea-pigs, but the increase in virulence occurs seldom, and only under special conditions.

Petroff's virulent strain of B C G was produced by growing the culture in media other than the glycerin-bile-potato recommended by Calmette, and his experiments therefore do not invalidate Calmette's claim that B C G grown under the conditions he prescribes is avirulent. Nevertheless, as Petroff points out, "if it (B C G) is to be used as a vaccine, we must bear in mind that the human body is not to be compared to glycerol-bile-potato as a medium for its continued viability and development." If it is found possible to produce virulent variants of B C G by growing it under certain laboratory conditions, it is at least not impossible that similar pathogenic variants may arise at times while the organism is growing under parasitic conditions. The present knowledge of the biology of *B. tuberculosis* is too rudimentary to enable one to predict with any degree of certainty the stability or variability of any property such as pathogenicity, and therefore the use of living cultures for immunisation may be associated with some degree of danger.

Culture Experiments.

In the course of some experiments on the growth of *B. tuberculosis* it was found that a certain human strain which had been propagated on artificial media for several years would grow in ordinary veal-peptone bouillon, prepared as follows:

To 5 kg. of minced lean veal, add 10 litres of distilled water; boil for 30 to 60 minutes. Filter. Add 100 g. Witte peptone and 50 g. NaCl. When the peptone and salt is dissolved, adjust the reaction to pH = 6·8. Boil for 30 minutes. Filter through paper. Fill 500 c.cm. into litre flasks, and autoclave for 10 minutes at 10 lb. pressure.

If the inoculum, instead of floating on the surface, was submerged in the liquid, it grew in the form of small granules at the bottom of the flask, the supernatant liquid remaining quite clear. The initial culture in the depths of the medium grew very slowly, sometimes requiring three to four months before there was any appreciable growth. Subsequent cultures, prepared by inoculating fresh flasks containing 500 c.cm. each of the bouillon with a few granules transferred by means of a pipette grew more quickly, but never very rapidly nor very abundantly. Cultures grown thus in the depths of the medium were occasionally, but not regularly, very much more virulent than cultures grown on solid media or on the surface of liquid media. Details of the experiments on this strain will shortly be published.

The same technique was applied to the growth of B C G and the same granular type of growth was obtained at the bottom of the bouillon flasks. As in the previous case the growth was slow. There was no tendency for the culture to grow at the surface of the medium, even after several months incubation.

In growing cultures in this manner, in veal-peptone bouillon, 500 c.cm. quantities in 1000 c.cm. Erlenmeyer flasks have been used regularly. Very uncertain and irregular results have been obtained with smaller volumes of media in tubes. It is important always to inoculate at least five flasks each time the culture is transferred, since even under apparently similar conditions the rate of growth varies considerably. Cultures grown in this way in the depth of the bouillon are referred to throughout this paper as "deep cultures."

Two strains of B C G have been investigated. The first was a strain obtained in March, 1928, from Captain S. R. Douglas, F.R.S., of the National Institute for Medical Research. This culture had been grown on egg medium or on Petroff's medium for several generations, but up to that time it had been completely avirulent for laboratory animals. This culture, which is referred to as B C G (I) was used in Expts. 1, 2, and 3. The virulence of deep cultures as shown in these experiments was rather surprising, and it seemed important to compare it with similar deep cultures of a strain obtained directly from Institut Pasteur.

Through the courtesy of Dr. Calmette, Institut Pasteur, two cultures on potato were received from the Medical Research Council on Oct. 31st, 1928. One of these cultures was opened and deep subcultures were made in bouillon. The remainder of the growth was scraped off, and used to inject a series of 20 guinea-pigs (Expt. 4). This culture is referred to as B C G 359.

Subcultures were made from these two strains at the following times:—

B C G (I).

March 1st, 1928: Culture received from Captain Douglas.
March 20th, 1928: Subcultured on Petroff's medium.
April 4th, 1928: First deep bouillon subculture from Petroff culture.
May 25th, 1928: Second deep bouillon subculture (used for Expts. 1 and 2).
June 27th, 1928: Third deep bouillon subculture.
August 8th, 1928: Fourth deep bouillon subculture (used for Expt. 3).

B C G 359.

Oct. 3rd, 1928: Culture on potato, received Oct. 31st, 1928 (used for Expt. 4).
Nov. 2nd, 1928: First deep bouillon subculture.
Nov. 20th, 1928: Second deep bouillon subculture (used for Expts. 5, 6, and 7).
Jan. 2nd, 1929: Third deep bouillon subculture.
Feb. 19th, 1929: Fourth deep bouillon subculture (used for Expt. 8).

The technique of preparing the material from the deep bouillon cultures for animal inoculation was as follows:—

The granules were pipetted from the bottom of the flask and centrifuged for about ten minutes to pack the growth in the bottom of the tube. The supernatant liquid was poured off and the sediment scraped out with a spatula and weighed wet. The granules were then ground up in a sterile agate mortar, using the clear supernatant liquid from the same culture for making the necessary dilutions.

The doses used in these experiments, therefore, represent a considerably smaller weight of bacilli than corresponding doses of bacilli which have been dried by pressing between sterile filter paper before weighing, as in Calmette's technique.

When cultures on solid media were used for inoculation, the growth was ground up in sterile saline solution, and the subsequent dilutions were also made in saline.

All the guinea-pigs used in these experiments were bred in the Oxford School of Pathology from a pure white strain. They have been isolated from animals infected with other strains of *B. tuberculosis*, both before and during the experiments. The guinea-pigs used in Expts. 1 and 3 were isolated in one room for the duration of the experiments. The cages were sterilised with lysol, followed by live steam before each experiment.

Cultures from the heart blood were made at the post-mortem examination of each animal inoculated with the B C G cultures, and, as shown in the tables, *B. tuberculosis* was found in most of these blood cultures. The number of tubercle bacilli present in the different cultures varied considerably. No attempt has been made to enumerate them accurately, but the relative numbers are indicated by one or more plus signs. (+) indicates very few individual organisms, less than six being found after one hour's search. + indicates individual organisms in larger numbers, and more readily found. ++ indicates that clumps and small colonies were found as well as individual bacilli. +++ indicates large numbers of clumps and colonies readily found with the low power of the microscope.

In a few cases where the post-mortem examination could be made before the blood had coagulated, smears of the heart blood were made and examined for *B. tuberculosis* directly. The technique of the procedure used for blood cultures and for the examination of the direct smears will be described in detail in another communication shortly to be published.

A striking feature of the post-mortem examination of the guinea-pigs infected with deep B C G cultures was the very high proportion which had tuberculous lesions in the testes or epididymes, whether or not the infection was generalised. Lesions in these organs were much more common than we had observed with any other strain of *B. tuberculosis*, human or bovine, which we have previously used. Tuberculous infection of the testes and epididymes is, therefore, noted in the Tables when found.

TABLE I.—*Second Deep Bouillon Subculture of B C G (I) 34 days old. Guinea-pigs Injected Intraperitoneally.*

Guinea-pig No.	Weight (g.) at—		Dose mg.	Days lived.	TB in blood culture.	Post-mortem.
	Injection.	Death.				
476	363	331	2	33	+ +	G.T.
477	447	350	2	39	+ +	"
478	395	302	2	62	+ +	G.T. Te. TB +
479	396	334	5	33	+ +	G.T.
480	381	231	5	39	+ +	"
481	347	232	5	37	+ +	"
482	457	344	10	39	+ +	G.T. Ut. TB +.
483	425	302	10	25	+	" " "
484	373	251	10	31	+	" " "
485	326	250	20	33	+ +	G.T.
486	357	262	20	40	+	"
487	330	250	20	40	+	"

G.T. = Generalised tuberculosis. TB + *B. tuberculosis* present. Te. = testes. Ut. = uterus.

The term G. T. used in the Tables means generalised tuberculosis. By this is understood extensive tuberculous lesions in lung, spleen, and glands. In the case of the B C G deep cultures the lesions were found in all stages of development, from slight infiltration to extensive caseation, and usually contained enormous masses of tubercle bacilli.

EXPT. 1. B C G (I) June 28th, 1928.—Twelve guinea-pigs were infected intraperitoneally with the second deep *bouillon subculture of B C G (I) in doses varying from 2 to* 20 mg. The culture was 34 days old at the time of inoculation. These guinea-pigs died in from 25 to 62 days. The post-mortem examination showed a severe generalised tuberculosis in each case. Cultures of *B. tuberculosis* were obtained from the heart blood, post mortem, of each *guinea-pig (Table I.).*

EXPT. 2. B C G (I) June 28th, 1928.—Twelve rabbits were injected intravenously with the same deep culture (34 days old) as used in Expt. 1. The doses varied from 5 to 50 mg. The four rabbits which had doses of 50 mg. all died in 11 to 14 days, and No. 203, which had 15 mg., *died in 19 days. These all showed acute congestion and* hepatisation of the lungs. The 7 remaining rabbits all lived over 200 days, and all developed generalised tuberculosis. Two of these rabbits were killed after they developed paralysis of the hind legs, and two others (198 and 201) were killed after they had developed a well-marked tuberculous arthritis. No. 201 is of particular interest, having developed a severe tuberculous arthritis in all legs, with extensive caseation and much fresh granulation tissue. The condition of the joints is shown in the X ray plates and the photographs (Figs. 3–8). Guinea-pig 814 was infected subcutaneously with caseous pus from one of the joints of rabbit 201. It died in 125 days, having generalised tuberculosis. *B. tuberculosis* was present in the culture of the heart blood of this guinea-pig, and was also found in a direct smear of the heart blood (Table II.).

EXPT. 3. B C G (I) August 19th, 1928.—Sixteen guinea-pigs were injected intraperitoneally with the fourth deep subculture in bouillon of B C G (I). The culture was 11 days old at the time of injection. Smaller doses were given than in Expt. 1. The guinea-pigs died in from 36 to 122 days. *All developed generalised tuberculosis, and B. tuberculosis* was again found in all the cultures from the heart blood taken post mortem. In 14 of the 16 animals the testes showed caseous lesions (Table III.).

TABLE III.—*Fourth Deep Bouillon Subculture of B C G (I) 11 days old. Guinea-pigs injected Intraperitoneally.*

Guinea-pig No.	Weight (g.) at—		Dose mg.	Days lived.	TB in blood culture.	Post-mortem.
	Injection.	Death.				
519	461	360	0·1	56	(+)	G.T.Te. TB +.
520	463	323	0·1	48	(+)	" "
521	467	353	0·1	47	(+)	" "
522	460	346	0·1	56	(+)	G.T.
523	455	353	1·0	50	+	G.T. Te. TB +.
524	474	310	1·0	49	+	" "
525	400	302	1·0	49	+ +	" "
526	401	420	1·0	86*	+	" "
527	400	384	2·0	93	+	G.T.
528	406	305	2·0	41	+	G.T. Te. TB +.
529	422	292	2·0	44	+	" "
530	406	292	2·0	45	+	" "
531	400	303	5·0	122	+	" "
532	398	302	5·0	37	+ +	" "
533	430	333	5·0	39	+	" "
534	424	331	5·0	36	+ +	" "

* Killed on account of paralysis. Te. = testes.

EXPT. 3A. Oct. 30th, 1928.—Cultures from the heart blood of four of the animals in Expt. 3 were injected

TABLE IV.—*Blood Cultures from Four Guinea-pigs in Expt. 3 injected Subcutaneously into Fresh Guinea-pigs.*

Guinea-pig No.	From guinea-pig No.	Weight (g.) at—		Days lived.	TB in blood culture.	Post-mortem.
		Injection.	Death.			
727	521	345	690	200*	(+)	H.L.
728	533	430	603	200*	+	G.T.
729	532	375	420	155	+	G.T.
730	534	300	604	200	+	G.T.

* Killed. H.L. = Small healed and healing lesions in lungs.

TABLE II.—*Second Deep Bouillon Subculture of B C G (I) 34 Days Old. Rabbits Injected Intravenously.*

Rabbit No.	Weight (g.) at—		Dose mg.	Days lived.	Post-mortem.
	Injection.	Death.			
197	1160	1373	5	201*	Killed because of paralysis. Lungs and kidneys, numerous caseous tubercles. *TB* +.
198	1172	1646	5	323*	Killed because of arthritis. Lungs and kidneys, numerous caseous tubercles. Right knee tuberculous.
199	980	1612	5	269	Lungs and kidneys, caseous lesions, TB +. Eye. Tuberculous conjunctivitis.
200	1135	1146	5	393*	Killed because of paralysis. Lungs and kidneys, numerous tubercles TB +. Right testis, small tubercle.
201	1217	1684	15	203*	Killed because of arthritis. Lungs, liver, and kidneys, several tubercles. Right eye, tuberculous iritis. Hind legs, carpals, metacarpals, and phalanges, caseation and granulation tissue. Joints 4 cm. diameter. Forelegs, similar lesions, but smaller, in ulnar, radial, and metacarpal joints. TB + + + + in smears.
202	1442	1803	15	255	Lungs, liver, kidneys, and right testis, tubercles present.
203	1200	1070	15	19	Lungs hepatised. Slight peritonitis.
204	1143	922	15	240	Lungs, liver, kidneys, and mesentery, numerous tubercles.
205	1270	1032	50	13	Lungs hepatised, numerous miliary tubercles. Liver, several abscesses, TB +.
206	1125	1003	50	14	Lungs hepatised. Liver numerous small abscesses TB +.
207	1300	1209	50	11	Lungs hepatised. Liver, numerous abscesses.
208	1105	1023	50	14	Lungs hepatised.

* Killed.

subcutaneously into four fresh guinea-pigs. Three of these developed generalised tuberculosis, and a few healed and healing lesions were found in the fourth one post mortem. Cultures of *B. tuberculosis* were recovered from the heart blood of each of these four guinea-pigs (Table IV.).

Expt. 3b. Nov. 12th, 1928.—Guinea-pig 526 (Expt. 3) was killed 86 days after inoculation and was found to have generalised tuberculosis. Parts of the lung, testis, and omentum were ground up in sterile saline, and the suspensions injected subcutaneously into six guinea-pigs. These all died of generalised tuberculosis, and *B. tuberculosis* was present in cultures from the heart blood of five of the six animals (Table V.).

Table V.—*Suspensions of Organs of Guinea-pig 526, Injected Subcutaneously into Fresh Guinea-pigs.*

Guinea-pig No.	Organ of 526.	Weight (g.) at—		Days lived.	TB in blood.		Post-mortem.
		Injection.	Death.		Culture.	Smear.	
752	Lung.	412	388	194	+		G.T.*
753	,,	426	381	109	+	+ +	G.T.
754	Testis.	378	389	136			G.T.†
755	,,	302	270	144	+ +		G.T.‡
756	Omentum.	300	317	122	+ + +	+	G.T.
757	,,	300	324	175	+		G.T.

* Epididymes caseous. † Right testis and epididymes TB +. ‡ Testes caseous.

Expt. 3c. Jan. 2nd, 1929.—Two cultures were isolated from the testes, and one from the lungs of guinea-pig 526. These cultures were made on Petroff's medium, and four guinea-pigs were inoculated with a 10 days' old subculture from each culture; the doses and route of infection are shown in the Table. These 12 animals all died in from 25 to 177 days, having well-developed generalised tuberculosis. Tuberculous abscesses were present in the testes or epididymes of nine of these animals, and *B. tuberculosis* was found in the culture from the heart-blood of nine of them (Table VI.).

Expt. 4. B C G 359 Nov. 2nd, 1928.—Twenty guinea-pigs, Nos. 732 to 751, were injected intraperitoneally with the culture of B C G 359, growing on potato, as received from l'Institut Pasteur. Two guinea-pigs were given doses of 50 mg. each, and the remaining 18 were divided into six groups of three, which were given doses of 20, 10, 5, 2, 1, and 0·1 mg. respectively. All but two of these guinea-pigs are alive and in good condition 730 days after inoculation No. 739 (10 mg.) and No. 740 (5 mg.) did not increase in weight to the same extent as the others. No. 739 was killed after 574 days, and small healing tubercles were found in the liver, gall-bladder, urinary bladder, and the left testis. There was no caseation. No. 740 died 672 days aft injection. Post mortem there was an acute peritonitis wi blood-stained fluid in the peritoneal cavity. There was r sign of tuberculous lesions in any organ except the left testi which had a caseous abscess of 1 cm. in diameter, and th right epididymis, which had a smaller caseous abscess, abo 0·5 cm. in diameter. *B. tuberculosis* was found in lar numbers in the smears of this caseous material. The cau of death in this animal was probably an acute perforatio of the intestine, which had no relation to the tuberculo infection. It is, however, of interest to note that caseo tuberculous lesions containing numerous tubercle baci were present in one testis and epididymis 22 months aft the intraperitoneal injection of the B C G culture 35 which was inoculated directly as received from the Instit Pasteur.

Expt. 5. B C G 359 Nov. 30th, 1928.—The secon deep subculture in bouillon of B C G 359, 9 days old, w injected into six guinea-pigs, Nos. 767 to 772. Doses of 1 1, and 0·1 mg. were given, each dose being administere subcutaneously to one animal and intraperitoneally t another. No. 768 (10 mg. intraperitoneally) was kill after 109 days; caseous lesions containing numero tubercle bacilli were present in the right testis and epididymi

Table VI.—*Cultures of* B. Tuberculosis *Recovered from Organs of Guinea-pig 526. 10-day old Subcultures Injected into Fresh Guinea-pigs.*

Guinea-pig No.	Dose mg.	Route.	Culture from—	Weight (g.) at—		Days lived.	TB in blood.		Post-mortem.
				Injection.	Death.		Culture.	Smear.	
797	1·0	Subcut.	Testis.	345	304	98	0		G.T.
798	1·0	I.p.	,,	363	317	36	+ + + +		G.T. Te. caseous TB +.
799	0·1	Subcut.	,,	400	519	149	+ +		G.T. Te. scarred.
800	0·1	I.p.	,,	385	261	46	+ +		G.T. Te. and epididymes TB +.
801	1·0	Subcut.	,,	333	394	92	+		G.T.
802	1·0	I.p.	,,	337	231	35	+ +		G.T. Te. epididymes +, left patella TB +
803	0·1	Subcut.	,,	359	291	117	0		G.T. Te. TB +.
804	0·1	I.p.	,,	313	384	269	0		G.T. Left epididymis TB +.
805	1·0	Subcut.	Lung.	304	241	83	+	+ +	G.T.
806	1·0	I.p.	,,	310	218	25	+		G.T. Te. and epididymes TB +.
807	0·1	Subcut.	,,	270	361	177	+ + +	0	G.T. Te. and epididymes TB +.
808	0·1	I.p.	,,	296	224	39	+ +	+ + +	G.T. Te. TB +.

I.p. = Intraperitoneal.

Table VII.—*Second Deep Bouillon Subculture of B C G 359, 43 days old. Guinea-pigs Injected Intraperitoneally.*

Guinea-pig No.	Weight (g.) at—		Dose mg.	Days lived.	Post-mortem.
	Injection.	Death.			
777	430		10		
778	387	300	10	13	G.T. Numerous tubercles on parietal peritoneum. Tubercles in kidney and right testis and epididymis TB +. Herxheimer reaction. Blood culture TB +.
779	382		10		
780	407	652	10	137*	Killed May 18th, 1929. G.T. Caseous tubercles in lungs and omentum. Few tubercles in liver; right testis caseous TB +.
781	384	522	1	328	Old healed lesions in testes.
782	430	570	1	78*	Killed March 20th, 1929. Miliary tubercles in lung and liver. Testes, epididymes, and mesenteric glands caseous, TB +.
783	461		1		
784	373		1		
785	377	519	0·1	137*	Killed May 18th, 1929. Healing tubercles in liver and lung.
786	456		0·1		
787	410		0·1		
788	500		0·1		
789	387		0·01		
790	400		0·01		
791	385		0·01		
792	372		0·01		
793	365	604	0·001	135*	Killed May 16th, 1929. No macroscopic lesions.
794	361		0·001		
795	391		0·001		
796	345		0·001		

* Killed.

B. tuberculosis was found in the culture of the heart blood taken post mortem. No. 772 (0·1 mg.i.p.) was killed, 167 days after injection, and found to be normal. The blood culture was negative. The remaining animals in this group are still alive at the time of writing—Dec. 18th, 1930.

EXPT. 6. B C G 359 Jan. 2nd, 1929.—Twenty guinea-pigs were injected intraperitoneally with the second deep subculture of B C G 359, 43 days old. As will be seen from the Table, this culture was slightly more virulent than the 9 days' old culture used in the previous experiment. No. 778 (10 mg.) died of acute generalised tuberculosis in 13 days. No. 782 (1 mg.) killed 78 days after injection, had definite caseous lesions containing tubercle bacilli in the testes, epididymes, and mesenteric glands, and a few small tubercles in the lung and liver. No. 785 (0·1 mg.) killed 137 days after injection had small healing tubercles in the liver and lung. No. 780 (10 mg.) killed at the same time, had generalised tuberculosis with caseous lesions in the lungs, liver, omentum, and right testis. No. 793 (0·001 mg.) killed 135 days after injection was normal. No. 781 (1 mg.) which died of an intercurrent infection after 328 days, showed only a few small healed lesions in the testis. The remaining animals are still alive and in good condition (Table VII.).

EXPT. 7. B C G 359 Feb. 20th, 1929.—Fifteen guinea-pigs (Nos. 849 to 863) were injected intraperitoneally with a second deep bouillon subculture of B C G 359, 92 days old. Five groups of three animals received doses of 10, 1, 0·1, 0·01, and 0·001 mg. respectively. A large proportion of the organisms in the culture were probably dead at this time, and the pathogenic properties of the culture had greatly decreased. Guinea-pigs 850 (10 mg.) and 852 (1 mg.), killed 86 days after injection, had only a few small tubercles in the liver. No. 862 (0·001 mg.), killed at the same time, was normal. No 853 (1 mg.), which died of an intercurrent infection 333 days after inoculation, showed no sign of tuberculous lesions.

EXPT. 8. B C G 359 April 3rd, 1929.—Fifteen guinea-pigs (Nos. 965 to 979) were infected intraperitoneally with the fourth deep bouillon subculture of B C G 359 43 days old. Five groups of three animals were given doses of 10, 1, 0·1, 0·01, and 0·001 mg. respectively. No. 965 (10 mg.) died 159 days after inoculation. The lungs were greatly congested and œdematous, but no macroscopic tubercles could be seen. The pleural cavity contained a great quantity of fluid. There were a few small healed tubercles in the liver. Both epididymes had caseous abscesses with numerous tubercle bacilli. Neither *B. tuberculosis* nor any other organism was found in the blood culture. No. 971 (0·1 mg.) and No. 976 (0·01 mg.), killed 44 days after infection, had a few very small tubercles in the testes, but no other tuberculous lesions. No. 968 died 605 days after infection. It was extremely emaciated. The left epididymis was the size of a large bean, and consisted of a fibrous-walled cyst full of caseous material in which numerous clumps of acid-fast tubercle bacilli were found. The wall of the cyst was slightly calcified in places. There was no normal tissue left. No other definitely tuberculous lesion was found. On the peritoneal surface of the small intestine there was a greyish-white thickened area about one centimetre long but no tubercle bacilli were found in it.

Discussion.

From these experiments it is apparent that under certain comparatively simple cultural conditions, B C G may at times develop a relatively high degree of virulence for laboratory animals. This phenomenon of mutation is still under investigation, and it is impossible at present to say exactly what factors in the medium or in the conditions of culture are responsible for bringing about this change. It is possible that the cultural methods employed favoured the development of organisms analogous to the "S" type isolated by Petroff, and partially suppressed the growth of the "R" type.

The two B C G cultures, B C G (I) and B C G 359, behaved very differently with regard to the development of virulence when grown under apparently similar conditions. In the case of B C G (I), all of the experimental animals infected with the deep culture, both rabbits and guinea-pigs, developed widespread progressive tuberculous lesions, which showed no tendency to heal. Guinea-pigs infected with the organs of these animals, or cultures isolated from them also developed progressive tuberculous lesions. Guinea-pig 727, injected with a blood culture from No. 521, failed to develop generalised tuberculosis, but the number of organisms in the culture injected was very small. The blood culture from No. 727, however, contained *B. tuberculosis*. The three guinea-pigs injected with blood cultures from other guinea-pigs in the same series all developed generalised tuberculosis.

In the case of B C G 359, only one of 20 guinea-pigs inoculated with the *original culture* as received from the Pasteur Institute had localised caseous tuberculous lesions in one testis and one epididymis when it died 22 months after inoculation. Another, killed 15 months after injection, had several healing lesions, but no sign of progressive tuberculosis. The second deep bouillon subculture of this strain was tested at three different stages, when 9, 43, and 92 days old. One of six guinea-pigs injected with the 9 days' old culture had caseous lesions in one testis and epididmyis when killed 169 days after inoculation. Another was normal. The 43 days' old culture proved to be slightly more virulent. Of 20 guinea-pigs, 1 died of acute generalised tuberculosis in 13 days; and 2 killed 78 and 137 days respectively after inoculation both had caseous lesions. None of the 15 guinea-pigs injected with the 92 days' old culture had developed generalised tuberculosis. Two, killed 86 days after infection, showed only a few very small tubercles in the liver, and a third, which had only 0·001 mg., was normal. The fourth deep subculture, tested when 43 days old, produced caseous lesions in the epididymes of two guinea-pigs, which died in 159 and 605 days respectively. Two other guinea-pigs, killed after 44 days, had a few small tubercles in the testes.

Before final conclusions as to the pathogenicity of tubercle bacilli can be drawn, it is very important that the animals should be kept under observation for a period, not of months but of years. We are, therefore, in full agreement with Petroff and with Watson, that in the great majority of experiments on the pathogenicity of B C G, the animals have been killed too soon after inoculation. A prolonged latent stage in an apparently benign infection cannot be taken as a criterion of the final outcome. Accordingly, all our surviving animals infected with B C G 359 are being kept, and will be reported on later.

Whether the marked difference in virulence of the deep cultures is inherent in the two strains of B C G, or is due to the influence of unknown factors beyond our control during the growth in deep cultures is impossible to say. In view of the experiments of others, it is likely that part, at least, of the difference is inherent in the strain. Thus, Petroff and Steenken (1930) found that "culture B C G 359 (which Petroff obtained in the fall of 1928 from the Pasteur Institute) was more difficult to dissociate than the three cultures which had previously been obtained." Watson (1930), referring to his pathogenicity tests, reports that "more positive results have been obtained with B C G Strain 80 (1924) than with Strain 17 (1925), while only one positive result has so far been obtained with Strain 346 (1927)."

It seems probable, as suggested by both Petroff and Watson, that continuous propagation of the culture on bile media has gradually further reduced its virulence since it was first generally used for immunisation.

Summary.

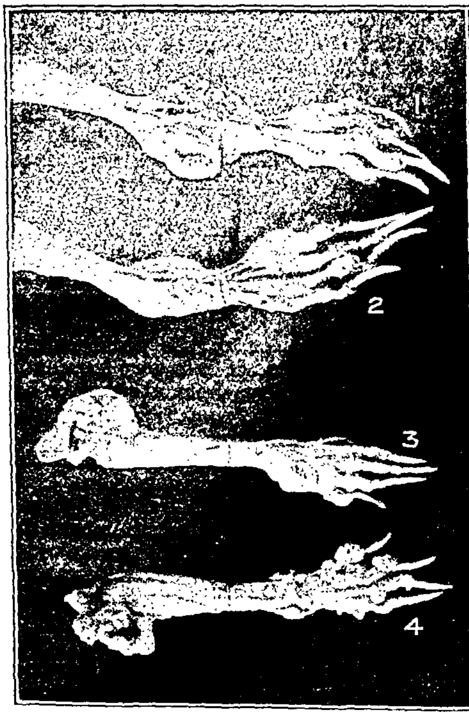
1. The pathogenic properties of two strains of B C G have been investigated.

2. Deep bouillon subcultures of B C G (I) produced generalised tuberculosis in all of 28 guinea-pigs which

were inoculated intraperitoneally with doses of from 0·1 to 20 mg., and produced severe progressive tuberculous lesions in all of 12 rabbits inoculated intravenously with doses of from 5 to 50 mg. Twenty-two of 23 guinea-pigs infected either directly with tuberculous material from these animals, or with cultures from the tuberculous material, developed generalised tuberculosis. *B. tuberculosis* was found in cultures from the heart blood of all of the 28 guinea-pigs injected directly with deep cultures of B C G (I), and in 19 of the 23 guinea-pigs infected with pathological material or cultures obtained from the animals originally infected with this culture.

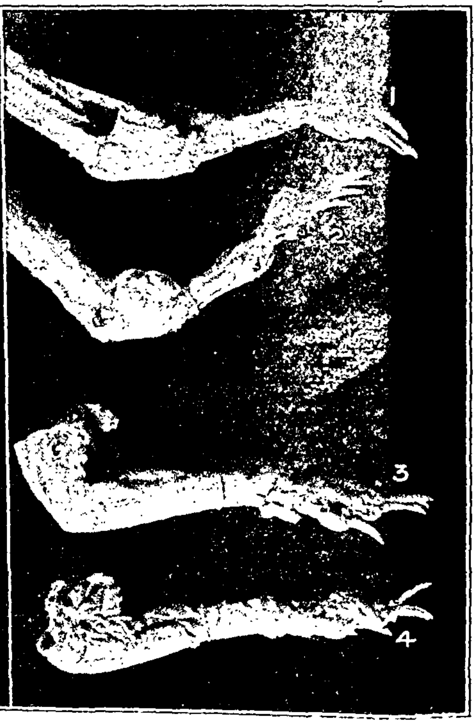
3. The pathogenicity of B C G 359 was tested on guinea-pigs. One of 20 guinea-pigs injected with the culture as received from the Pasteur Institute died from an unknown cause 672 days after an intraperitoneal dose of 5 mg., having caseous tuberculous lesions without signs of healing, in the right testis and the left epididymis. Deep bouillon subcultures of this strain were tested on 56 guinea-pigs, 12 of them receiving doses of 10 mg. intraperitoneally; of these 12, 3 which were killed and 2 which died had definite progressive tuberculous lesions, and 4 of the 5 had caseous abscesses in the testes or epididymes.

FIG. III.



Expt. 2.—Rabbit 201, showing large lesions in joints of all legs.

FIG. IV.



Same as Fig. III. Lateral view.

We are indebted to Dr. Calmette of the Pasteur Institute for kindly supplying the culture of B C G 359 to the Medical Research Council, who were good enough to forward it to us; and to Captain S. R. Douglas, F.R.S., for the culture B C G (I). We especially wish to thank Dr. R. H. Sankey for taking the X ray photographs, and Dr. A. Stanley Griffith, who has given us his experienced opinion on two cultures submitted to him. Our thanks are due to Mr. Jesse Wheal and Mr. J. L. Nappin for their painstaking care of the animals which is so necessary in these prolonged experiments. One of us (R L V.) is greatly indebted to the Medical Research Council for a part-time grant.

Report on Two Cultures

BY DR. A. STANLEY GRIFFITH.

Two cultures taken from rabbit 201 and guinea-pig 526, marked TB 201 and TB 526 respectively, were sent to Dr. Stanley Griffith, who had kindly undertaken to type them for us. He was entirely unaware of the type and origin of the cultures. TB 201 was isolated from the knee-joint of rabbit 201 (expt. 2), and TB 526 was isolated from the testis of guinea-pig 526 (expt. 3). As well as studying the cultural characters of these two strains, Dr. Griffith made the following animal experiments.

TB 201.

Guinea-pig 5268 was injected with about 10 mg. subcutaneously. It weighed 390 g. on the day of injection, and 320 g. when killed 37 days later. The post-mortem findings were: Large ulcer. Inguinal glands, caseous and softened; iliac, portal, and bronchial glands caseous in cortices. Spleen enlarged, with necrotic patches in the margin. Liver mottled with yellow foci. Lungs contained tubercles.

Guinea-pig 5269, injected subcutaneously with about 1 mg. It weighed 400 g. on the day of injection, and also 400 g. when killed 82 days later, being paralysed. Post mortem, there was a chronic generalised tuberculosis, the lesions showing little caseation.

Rabbit 3450 was injected subcutaneously with 10 mg. of a culture isolated from guinea-pig 5268. It weighed 1820 g. on the day of injection, and 2300 g. when killed 146 days later. The post-mortem findings were: Softened caseous lesion. Scapular glands, caseous and softened. Lungs contained a moderate number of grey caseating nodules, 2 to 3 mm. in diameter, mainly dorsal. No tuberculosis elsewhere.

TB 526.

Guinea-pig 5270, injected subcutaneously with about 3 mg., weighed 420 g. on the day of injection, and 350 g. when it died 86 days later. The post-mortem finding was typical severe generalised tuberculosis.

Guinea-pig 5271, injected subcutaneously with about 10 mg., weighed 280 g. when injected, and 250 g. when it died 40 days later. The post-mortem examination showed a generalised tuberculosis. The liver and spleen were closely beset with submiliary grey-white tubercles.

Rabbit 3465 was injected subcutaneously with 20 mg. of a culture isolated from guinea-pig 5271. It weighed 1500 g. when injected, and 2570 g. when it was killed 226 days later. Post mortem, there was only a softened local lesion.

Rabbit 3535, inoculated intravenously with 0·01 mg. of culture TB 526, weighed 1550 g. when inoculated, and 1800 g. when killed 69 days later. Post mortem, in the lung there were some grey, caseating superficial and marginal patches, as well as discrete caseating tubercles, not numerous;

FIG. I.

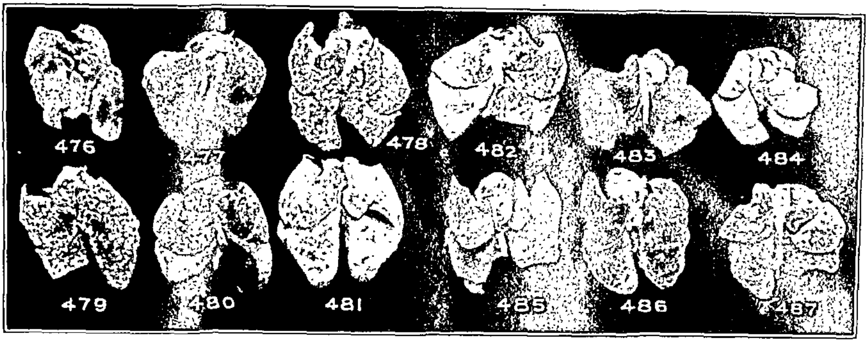


FIG. II.

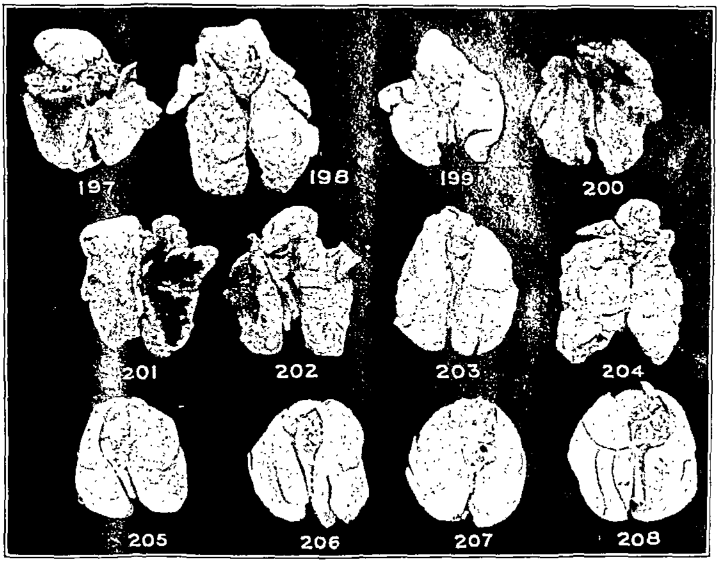


FIG. V.

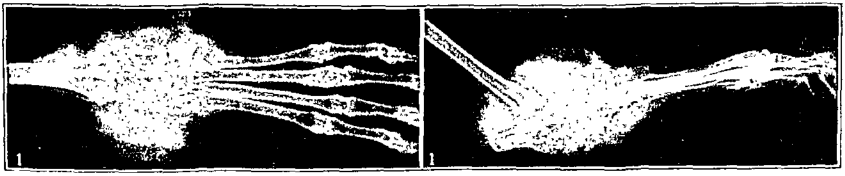


FIG. VI.

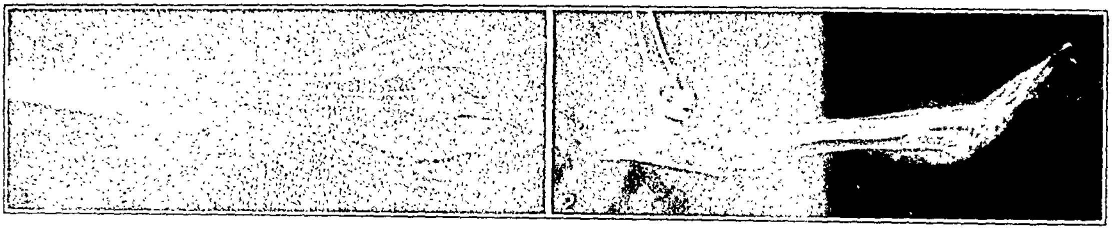


FIG. VII.

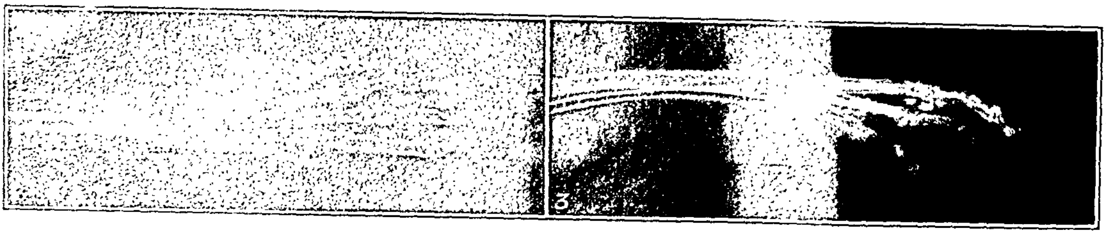


FIG. VIII.

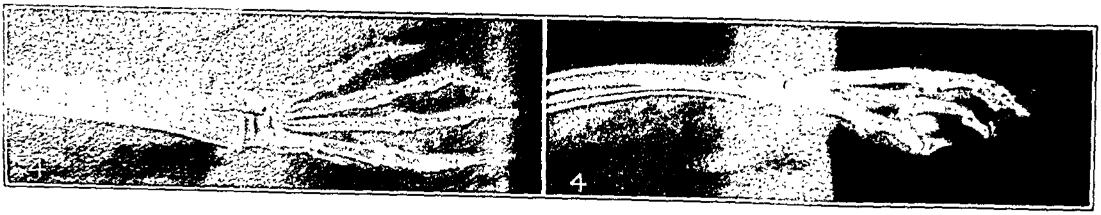


FIG. IX.

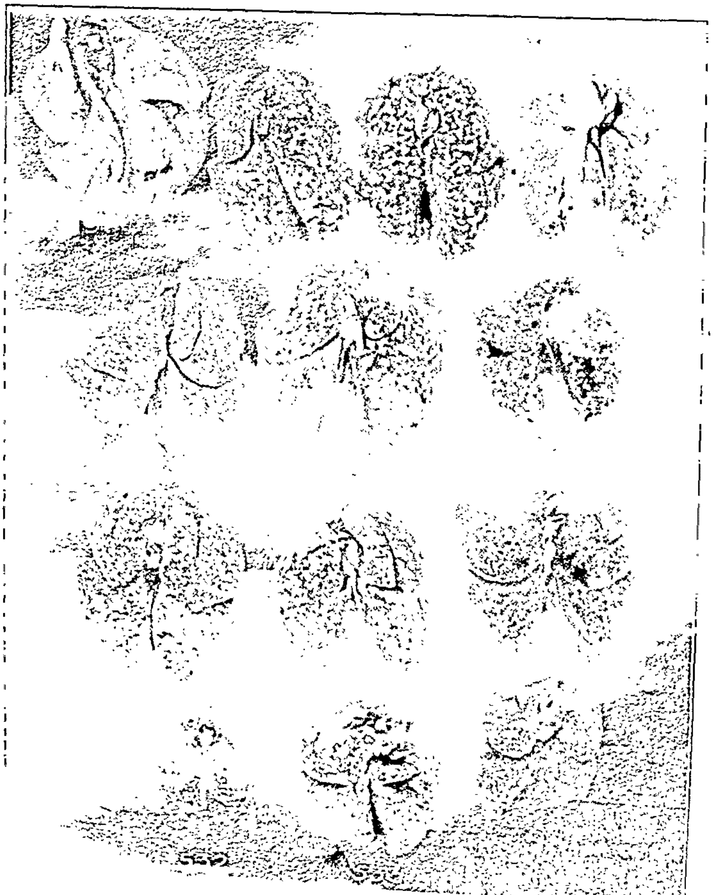


FIG. I. (Expt. 1).—Lungs of guinea-pigs, showing extensive tuberculous lesions.

FIG. II. (Expt. 2).—Lungs of rabbits Nos. 203, 205, 206, 207, and 208 hepatised; caseous lesions present in others.

FIG. V. (Expt. 2, Rabbit 201).—Radiogram of hind leg (1), lateral and dorsal aspects. Shows very marked bone destruction.

FIG. VI. (Expt. 2, Rabbit 201).—Radiogram of hind leg (2), lateral and dorsal aspects. Bone destruction less advanced than in (1).

FIG. VII. (Expt. 2, Rabbit 201).—Radiogram of fore leg (3), lateral and dorsal aspects, showing very early bone changes.

FIG. VIII. (Expt. 2, Rabbit 201).—Radiogram of fore leg (4), lateral and dorsal aspects, showing very early bone changes.

FIG. IX. (Expt. 3).—Lungs of guinea-pigs, showing extensive tuberculous lesions.

PROF. DREYER AND MR. VOLLUM:
EXPERIMENTS WITH B C G.

the tracheal glands contained caseating tubercles, and there were three or four small tubercles in the kidneys.

In his report, Dr. Griffith says: "The cultures are 'mammalian,' but do not conform exactly either to the human or to the bovine type. Both strains have grown with rather more luxuriance on egg and glycerin media than any strain obtained from bovine tuberculous lesions though not equal to the eugonic human type of tubercle bacillus or to B C G. Culturally, they resemble bovine strains which have been modified by cultivation on media containing glycerin. The results of the virulence tests are inconclusive, owing to the small number of animals used. Both strains were virulent for the guinea-pig, producing typical general tuberculosis, while for the rabbit they were of relatively low virulence, the pathogenic effects not exceeding in severity those which are sometimes produced by standard human bacilli."

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ELECTROCARDIOGRAPHIC CHANGES DURING BRIEF ATTACKS OF ANGINA PECTORIS.

THEIR BEARING ON THE ORIGIN OF ANGINAL PAIN.

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THE electrocardiogram of patients subject to angina pectoris is commonly abnormal, and provides evidence of permanent disease of the heart muscle. Pathological observation has proved that such disease is most often an ischæmic fibrosis of the myocardium due to obliterative arterio-sclerotic changes in the coronary field. During the last decade there has been separated from the brief anginal attacks induced by effort the prolonged anginal seizures caused by thrombosis of a coronary artery and consequent localised infarction of the heart. During and after these anginal seizures due to cardiac infarction the ventricular deflections of the electrocardiogram are often profoundly modified, and serial records show a characteristic sequence of changes which represent a progression of pathological events in the heart.[7] A vast number of such electrocardiograms has been taken and reported in cases of anginal pain due to cardiac infarction.

Remarkably few examples are on record of electrocardiograms taken during ordinary brief paroxysms of angina pectoris. Clerc[3] figures inversion of the T waves during an anginal attack and a return to normal after the attack, though it is not quite clear from the text whether the attack was coronary thrombosis or an ordinary paroxysm of angina pectoris. Arrilaga[1] says that during pain he has observed bundle-branch block which disappeared when the pain ceased. Bousfield[2] has reported a case of syphilitic aortitis in which, during a short anginal attack, a right bundle-branch block was recorded which disappeared shortly afterwards with cessation of the pain. The electrocardiogram after the attack showed such deep inversion of the T waves in leads II. and III. as would nowadays suggest cardiac infarction, but the after-history of the case is not given. Gallavardin and Rougier[5] have published a long electrocardiogram taken during an anginal attack accompanied by syncope and a fall of blood pressure with a pulse which became impalpable at the wrist. In parts of this curve there is obvious depression of the R–T segment of the ventricular complexes, yet its significance is doubtful viewing the complexity of the case. The most important observations are those of Feil and Siegel,[4] who published electrocardiograms taken during and after short anginal attacks in four cases where cardiac infarction could be excluded. In three they recorded a definite depression of the R–T segment of the ventricular complex in leads I. and II. during the pain, and a return to normal after the pain had ceased.

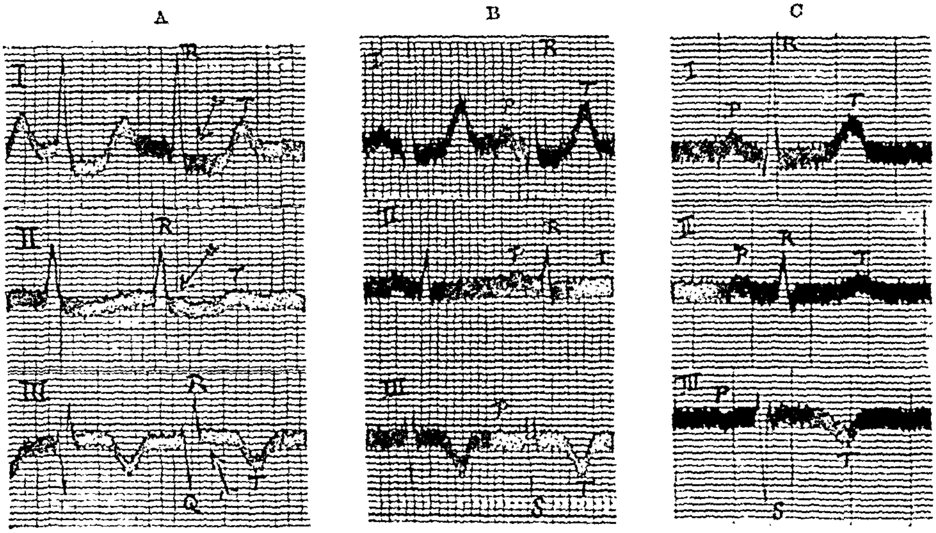
Opportunities of taking electrocardiograms during transient anginal attacks arise but rarely and by chance, and it seems desirable that all such records should be reported whether giving positive or negative evidence of change. Thus, in the course of time, a sufficient number will be available from which valuable conclusions may be drawn. We have been fortunate enough to see five patients from whom electrocardiograms were obtained during and after short paroxysms of anginal pain. These did show that the ventricular deflections were modified during the paroxysm of pain and that the modifications disappeared with the pain. In none of these cases was there any question of coronary thrombosis at the time the records were taken, though one patient had probably had coronary thrombosis three months previously.

Five Case Records.

CASE 1.—Female aged 59. For some years she had been easily breathless when, in 1923, she began to feel pain at the upper half of the sternum, spreading down both arms to the wrists, always induced by exertion and eased by rest. In some of the attacks she noticed palpitation which stopped suddenly as the pain eased. When seen in July, 1924, the heart was not enlarged (X ray). Heart sounds normal. Blood pressure, 140/95 mm. Wassermann reaction negative. During her first visit she was observed in a typical severe anginal attack, and at the height of the pain the pulse, first noted regular and of moderate rate, became completely irregular and frequent. An electrocardiogram taken while the pain was still present showed auricular fibrillation. Fifteen minutes later, after all pain had ceased, a second record showed normal rhythm. In spite of prolonged rest anginal attacks recurred over a year and in July, 1925, cervical sympathectomy was performed. Some improvement followed; but in June, 1928, she was still subject to anginal pain on exertion. The heart was now enlarged to the left and the aorta somewhat widened (X ray).

The electrocardiograms are reproduced in Fig. 1. The first curve (A) taken during an attack of anginal pain, shows auricular fibrillation and also depression of the R–T segment of the ventricular complexes in leads I. and II.; in lead III. the initial ventricular complex is diphasic, consisting of a downward deflection Q followed by an upward one, R. In the second curve (B) taken 15 minutes later, normal rhythm is present and the R–T segment has become iso-electric; in lead III. there is a single downward deflection of the initial ventricular complex S. In the third curve (C) taken two months later in the absence of pain, T is upright in lead II., and R–T is iso-electric.

FIG. 1 (Case 1).



During anginal attack. Fifteen minutes after attack. Two months later.

(A) Auricular fibrillation during attack, R–T deviation in all leads (arrows); (B) Normal rhythm, R–T deviation has disappeared, T flat in lead II.; (C) T upright in lead II.

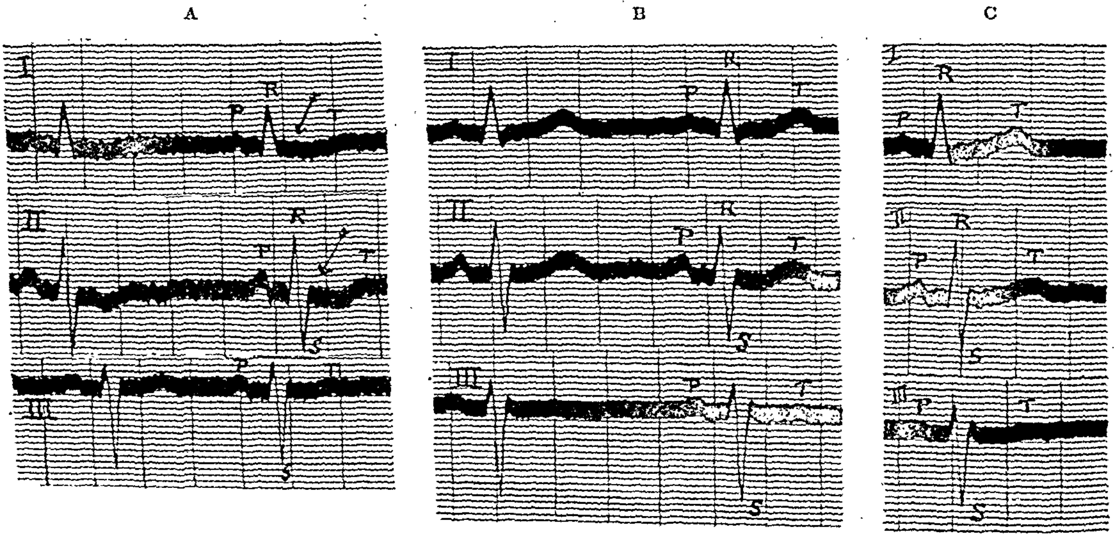
CASE 2.—Male aged 65. First seen in February, 1930. For a month he had been liable to pain in both wrists at times, and for 10 days he had had attacks of burning pain at the upper half of the sternum, lasting a few minutes. On examination, the heart was found to be moderately enlarged and the aorta slightly widened as if by atheroma (X ray). At the apex the sounds were distant, and the aortic second sound was accentuated. The arteries were slightly thickened; the blood pressure was 185 mm. systolic. A typical anginal attack was witnessed, and while the pain was still present an electrocardiogram was obtained. A second record was taken 40 minutes later, after pain had entirely ceased, and a third was taken two months later, when he was out of pain though still subject to it on exertion.

The electrocardiograms are reproduced in Fig. 2. There is distinct depression of the R–T segment and of the T wave in leads I. and II. in the attack (Fig. 2, A) compared with subsequent records (Fig. 2, B and C), while in lead III. T is upright in the attack and flat in later curves.

CASE 3.—Male, aged 70, was first seen in August, 1930. There was a history of syphilis at the age of 23. Two years previously he had first felt pain at the lower part of the sternum while cycling uphill. A few months later he began to suffer from frequent anginal attacks always induced by exertion; the pain was sternal and radiated to the left arm. On examination, signs of aortic incompetence were found. The heart was slightly enlarged to the left and the aorta showed the general dilatation typical of syphilitic aortitis (X ray). Blood pressure, 120/65 mm. Wassermann reaction positive. During a short attack of anginal pain an electrocardiogram was obtained, and another 10 minutes later, when pain had gone.

These electrocardiograms are reproduced in Fig. 3. During the pain (Fig. 3, A) there is a depression of R–T in all leads notably in lead II., and the T wave in lead III. is smaller amplitude than after the attack. In the second curve (Fig. 3, B) after all pain

FIG. 2 (Case 2).



During anginal attack. Forty minutes after attack. Two months later.

(A) R–T depression and flat T waves in leads I. and II.; (B) R–T depression disappeared, upright T in leads I. and II.; (C) No change.

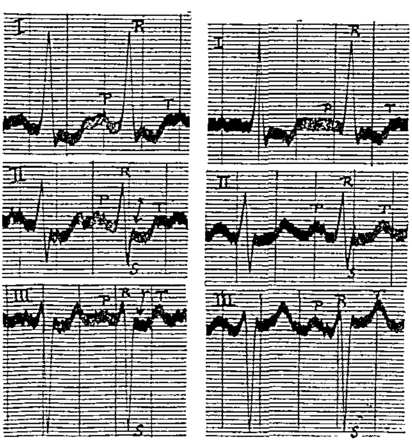
had ceased, the R–T segment has returned to iso-electric level in leads II. and III.

CASE 4.*—Male, aged 60, first seen in July, 1930. For ten years he had been getting increasingly breathless, and in December, 1929, he first began to feel pain in the chest on exertion which forced him to stand still, and which eased rapidly with rest. The pain started near the right nipple and spread to the lower end of the sternum and across the chest. The attacks became more frequent and more easily provoked and, on June 7th, 1930, he had a severe anginal seizure lasting four hours, in which the pain spread down both arms to the fingers. This was followed by recurrent severe and prolonged attacks of pain. On July 24th, 1930, he was admitted to hospital, as it was thought that his severe and prolonged attacks of pain were due to cardiac infarction.

On examination, pulse regular, rate 70. Arteries were not thickened; blood pressure, 120/80 mm. Apex-beat in nipple line; heart sounds distant, no murmurs. No signs of heart failure. X ray examination, heart normal in size, aorta very slightly widened. Electrocardiogram, normal rhythm, T waves flattened in all leads, and very slight R–T deviation in opposite directions in leads I. and III.

During a stay of seven weeks in hospital this patient had a number of short anginal attacks usually induced by emotion or slight exertion and rapidly relieved by amyl nitrite. Shortly before his discharge from hospital, when he had greatly improved, he had a mild anginal attack lasting a few minutes while in the cardiographic department, during which an electrocardiogram (Fig. 4, A) was taken. Another record (Fig. 4, B) was obtained ten minutes later, after all pain had ceased. The first record, taken during the pain, showed obvious inversion of the T wave in leads I. and II., with deviation of R–T below the zero level in lead I. and above it in lead III. In the second curve, after pain had ceased, T was flattened in lead I. and upright in lead II., and R–T deviation had almost disappeared. An hour later he had another milder anginal attack, during which the third record (Fig. 4, C) was obtained, and five minutes later, after all pain had ceased, the fourth record (Fig. 4, D) was taken. These last two curves exhibit the same changes, though of slighter degree, during the pain as were recorded in the previous attack—namely, inversion of T in lead I. and R–T deviation in leads I. and III. Another electrocardiogram taken five days later, when he was free from pain, was identical with the other records between attacks. The two anginal attacks in which these records were obtained were not at all severe, lasted only a few minutes, and occurred three months after his symptoms of cardiac infarction, at the time of his discharge from hospital and when he had greatly improved. The changes in the electrocardiogram during anginal pain were transitory, for within a few minutes the curve had returned to its normal form—i.e., identical with records taken

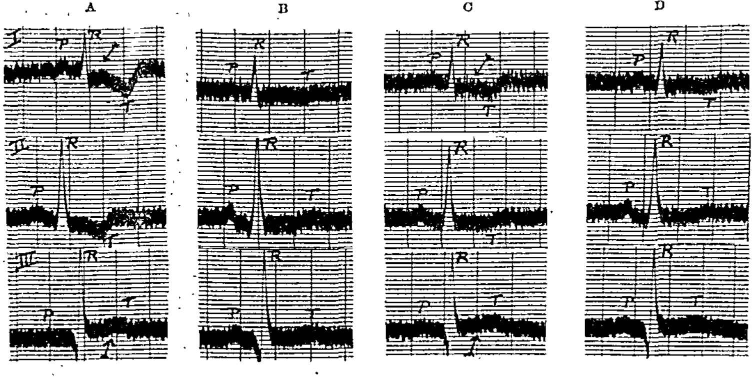
FIG. 3 (Case 3).



During anginal attack. Ten minutes after attack.

(A) R–T depression in all leads, marked in lead II.; (B) R–T iso-electric in leads II. and III.

FIG. 4 (Case 4).



During anginal attack. Ten minutes after attack. During milder anginal attack. Five minutes after attack.

(A) R–T deviation in leads I. and III., and inversion of T in leads I. and II.; (B) T flat in lead I., positive in lead II., R–T deviation diminished; (C) Reappearance of R–T deviation and of T wave inversion in lead I.; (D) Return to form seen in (B).

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* The electrocardiograms in this case were all taken in the Cardiographic Department, London Hospital, by Dr. Harold Cookson, and we are much indebted to him for placing them at our disposal.

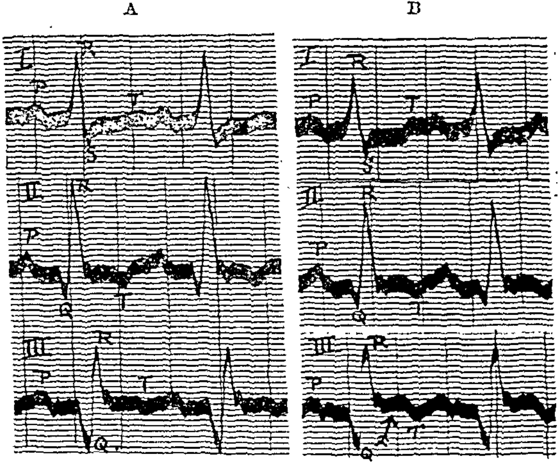
before and after the day on which these two particular attacks occurred.

CASE 5.—Male, aged 53, seen in September, 1930. For two years he had suffered from a burning pain above both nipples on exertion, lasting a few minutes, and during the last year the pain had radiated down both arms in the attacks. Since March, 1930, he had had several nocturnal anginal attacks each lasting about 15 minutes. On examination, the arteries were slightly thickened; blood pressure 160/110 mm. At the apex, the sounds were distant, and the aortic second sound was accentuated. X ray examination heart considerably enlarged to the left, aorta slightly widened. No signs of congestive heart failure. Wassermann reaction negative.

Electrocardiogram (Fig. 5, A) showed abnormal widened QRS waves in all leads, and inversion of T in leads II. and III. The curve probably represents a partial bundle-branch defect.

While dressing, pain in the chest started but passed off after amyl nitrite. Shortly afterwards pain recurred becoming fairly severe, sweat appearing on the forehead. While this pain was present a second electrocardiogram (Fig. 5, B) was taken, and a third after pain had ceased. When compared with curve A, taken before the attack, curve B, taken during the pain, shows the following slight changes: in lead III. there is definite slight elevation of R-T and a sharply pointed negative T has appeared, while the notch at the summit of R is widened. In lead I. there is a slighter depression of R-T, and T appears diphasic compared to the first curve. Though these changes are slight in degree, they are definite and similar in nature to those occurring in the previous cases.

FIG. 5 (Case 5).



Before anginal attack. During anginal attack.

(A) Abnormal widened QRS in all leads, T negative in lead II.; (B) R-T deviation in leads I. and III., notably in lead III., and also widening of summit of R in lead III.

DISCUSSION.

In all these five patients electrocardiograms taken during short anginal paroxysms showed definite and transitory changes in the ventricular deflections. There was a depression of R-T and a diminution in the amplitude or inversion of the T waves in one or more leads, changes closely resembling though not so pronounced as those which follow cardiac infarction in the early stages. It is surely significant that both transient anginal pain and cardiac infarction can affect the electrocardiogram in a similar manner; and it seems reasonable to infer that the mechanism underlying this electrocardiographic change is essentially the same in both cases—an ischæmia of a part of the cardiac muscle. We do not suppose that the electrocardiogram is always modified during short anginal attacks, but our evidence confirms that of Feil and Siegel that it is modified in a proportion of cases. The fact is of considerable significance in relation to the pathogenesis of anginal pain. Even in undoubted cardiac infarction, the electrocardiogram sometimes fails to give evidence of it. If, then, as we believe, paroxysmal anginal pain is the manifestation of a similar but transient ischæmia, we should expect its electrocardiograhic changes to be slighter in degree and less constant than in cardiac infarction.

Pathogenesis of Anginal Pain.

Of the many theories which have been advanced to explain the causation of anginal pain since Heberden first described it, only two have stood the test of time and gained any degree of general acceptance—namely, the coronary theory which should include myocardial ischæmia and the aortic theory. Since Jenner's time, attention has been riveted on the coronary arteries, and a vast amount of solid pathological evidence has been accumulated in support of Jenner's theory, notably by Huchard. In spite of this, the aortic theory appeared to be gaining favour in what might be called the pre-coronary-thrombosis era, thanks to the eloquence and authority of its sponsors, especially Allbutt. During the last fifteen years our knowledge of the anatomy, physiology, and pathology of the coronary circulation has been greatly extended, and the study of coronary thrombosis has revealed many new facts of importance in relation to angina. When the pathogenesis of anginal pain is reconsidered in the light of this additional knowledge, attention must inevitably centre once more on the coronary arteries; and the claim that they are the source of anginal pain seems to-day wellnigh incontestable. Before the theory of the aortic origin of angina can again be supported, more conclusive evidence than that at present available is required, and we do not believe that it will now bear critical examination.

The crux of the problem has always been this—that a paroxysmal pain cannot be explained simply in terms of morbid anatomy, for the anatomical lesion is there before the pain begins, during the pain, and after the pain has subsided. In order to correlate a transient disturbance of function with a permanent structural change, an additional factor is required—for example, coronary spasm, claudication or cramp of the heart, or aortic distension—and this factor can neither be confirmed nor refuted by evidence found at necropsy. Now in coronary thrombosis, coincident with the pain something has happened in the heart which was not present before the onset of pain, something, moreover, which can be demonstrated at necropsy. In other words, coronary thrombosis provides the proof that anginal pain can and often does have a coronary *origin*. Where a prolonged anginal seizure from cardiac infarction arises in a patient previously subject to anginal pain on exertion, we can scarcely avoid the assumption that the *paroxysmal pain had as its basis* the coronary atheroma of which thrombosis was a final *complication*. We have a parallel in cerebral arteriosclerosis, where transient disturbances of function ("cerebral angiospasm") not infrequently precede cerebral thrombosis, or in peripheral arterio-sclerosis where intermittent claudication or nocturnal cramps may precede gangrene of the limb. As Gallavardin has remarked, not every case of arterio-sclerotic gangrene has suffered from claudication any more than every case of cardiac infarction has suffered from previous angina.

The acceptance of the coronary theory of angina will have a salutary effect on medical thought and practice, but it is only the beginning of the problem *of anginal pain and not the end. Does the pain* arise in the artery itself or in the ischæmic myocardium? The theory of myocardial ischæmia, first put forward by Allan Burns, has recently been amplified by Keefer and Resnik[6] under the name of myocardial anoxæmia, and they show that it is not difficult to explain, in terms of coronary insufficiency, the occurrence of anginal pain in aortic incompetence, severe anæmia, and other conditions under which it is also encountered clinically. Indeed it has now become more difficult to explain the absence of anginal pain than its presence. We do not know why, in certain cases, cardiac infarction should remain quite painless, and further careful study of such exceptions is required. The coronary theory need not be an exclusive one, nor does its acceptance involve rejecting entirely the possibility of anginal pain also originating in the aorta.

In support of the coronary theory we have presented evidence that ordinary attacks of angina pectoris arise in the myocardium, and that they differ only in degree from the prolonged anginal seizures due to cardiac infarction. In one we have a functional ischæmia, in the other an organic. It is difficult to conceive a functional ischæmia arising otherwise than from coronary spasm. Without pretending to discuss other evidence for and against coronary spasm, we would suggest that, if it does occur, the appropriate site for it is in the arterioles. If a main coronary branch be narrowed by atheroma, this may well predispose to spasm of the arterioles which spring from it beyond the obstruction, for there is evidence that such is the mechanism by which the pain of intermittent claudication is produced in the limbs.

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POST-INFLUENZAL ACUTE PARENCHYMATOUS KERATITIS.

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NEARLY all the components of the visual apparatus are susceptible to damage from the toxin or toxins of influenza. In the number and variety of its ocular manifestations influenza probably surpasses all other acute infectious diseases. The commonest complication is an acute conjunctivitis, seldom severe, accompanying the respiratory form of the disease, and induced by upward spread of the infection from the nasal mucous membrane along the nasolacrymal duct. Most of the other complications might be more *accurately described as sequels, since they tend to* arise at the end of an attack of influenza or during the convalescent stage. Well known examples of these sequels are herpes febrilis of the cornea, iridocyclitis, optic neuritis affecting the nerve-head or *the retrobulbar portion of the nerve*, panophthalmitis, extrinsic or intrinsic ocular palsies, dacryo-adenitis, and orbital abscess. In the past two years I have made observations on eight patients who, during the first month of convalescence from influenza, developed acute parenchymatous keratitis complicated by iridocyclitis. All of them were in the fourth or fifth decade of life, and neither sex predominated. One of the women had suffered from attacks of corneal ulceration after measles in childhood, but none of the others gave any history of previous inflammatory trouble of the eyes. The attack was unilateral and painful in every case.

Clinical Description.

Within a few weeks of apparent recovery from a bout of influenza one eye begins to suffer from irritability and photophobia. Although pain is a prominent feature, its full development is often delayed for two or three days, so that an insidious onset results. On examination of the affected eye, conjunctival and ciliary injection are obvious. In the central region of the cornea is a deep greyish haze, behind which can be seen a few localised keratic precipitates. The epithelial surface lacks its normal lustre, and frequently shows minute erosions, some of which may coalesce to form a corneal ulcer. One or more nodules of episcleritis near the limbus can often be seen. Superficial vessels are apt to encroach on the peripheral region of the cornea around part of its circumference. Evidence of iritis is provided by engorgement of the vessels near the surface of the iris, together with discoloration and impairment of its pattern. The pupil responds well to the action of atropine in the early stages of the affection. Fragments of pigment torn away during the process of mydriasis will be found adhering to the anterior capsule of the lens. The fundi are normal.

With the aid of the slit-lamp, the central corneal infiltration is seen to consist of a multitude of grey dots situated in the middle and superficial layers of the substantia propria. Linear streaks or "false folds" are found in the deepest layers of the corneal substance, and there is well-marked bedewing of Descemet's endothelium. In addition to the large central keratic precipitates already seen with a loupe, there are usually some smaller precipitates on the back of the rest of the cornea, especially in its lower part. The appearance of the epithelium is variable, but some degree of roughening and bedewing can always be detected, whether or not the surface has become actually eroded. Numerous particles can be seen floating in the anterior chamber.

The above-described condition responds well to treatment by means of rest, heat, irrigation with weak antiseptic lotion, and the application of atropine ointment. Nevertheless, the patient should remain under observation for some weeks after the eye has settled down, because recurrence of iridocyclitis or corneal ulceration was noted in several cases. A convalescent holiday is the best protection against such relapses. Transparency of the cornea is not completely restored, but the eventual degree of opacity is not great.

It is necessary to emphasise the unilaterality of this condition, because the commoner type of post-influenzal iridocyclitis is bilateral, and presents the *following points of distinction: (a) It is not complicated* by infiltration of the corneal substance. (b) Pain is not a prominent feature. (c) It has no tendency to recur.

ILLUSTRATIVE CASES.

CASE 1.—A man, aged 47, developed typical respiratory influenza in March, 1930. There was an abrupt onset, accompanied by severe headache, acute coryza, and a rise in temperature lasting four days. Eight days after the beginning of the attack he was able to get out of bed, but had not yet fully recovered his strength. A few days later the left eye began to suffer slight pain and irritability, which steadily grew worse until he attended Moorfields as an out-patient three weeks after the onset of influenza.

On examination the right eye was normal. The left eye showed conjunctival and ciliary injection; a small ulcer on the superotemporal quadrant of the cornea near the limbus; *localised central corneal infiltration and keratic* precipitates; engorgement of the iris vessels, and one posterior synechia below. After initial curettage and carbolisation of the ulcer, treatment consisted of hot applications and atropine instillation. Pigmented fragments torn away from the *posterior surface of the iris* were observed adhering to the anterior lens capsule after the pupil became *dilated*.

Four days later the ulcer had healed. The corneal infiltration could be resolved into numerous grey dots situated in the anterior two-thirds of the substantia propria. Several striæ were detected in the deepest layers of the substantia, and endothelial bedewing was present over the whole posterior surface. Many circulating particles were visible in the aqueous humour. One month later a fresh corneal ulcer appeared *at the site of the previous one, but* healed within four days. After a further three weeks, early in June, there occurred a mild relapsing iritis which subsided after three days. The patient then went away for a fortnight's convalescent holiday, since when he has had no further trouble. His fellow eye never showed any sign of involvement. The fundi were normal.

The patient had never suffered from syphilis, and the lesions of the left cornea differed from ordinary syphilitic interstitial keratitis in the following main respects: (*a*) There was no infiltration or vascularisation of the deepest layers of the substantia propria. The only new-formed vessels were a few superficial ones in the neighbourhood of the ulcer. (*b*) The infiltration was localised to the axial portion of the cornea. (*c*) Part of the corneal surface underwent ulceration—a process that hardly ever occurs in syphilitic interstitial keratitis.

CASE 2.—A woman, aged 58, was treated eight years ago for keratitis and iridocyclitis of the right eye arising one week after recovery from a sharp febrile attack of respiratory influenza. Examination this year revealed shrunken pigmented remains of keratic precipitates in the central portion of the right cornea. In the anterior and middle layers of the substantia propria the arrangement of the lamellæ had undergone distortion. Striæ were present in the posterior layers. The total thickness of this cornea in its central region was increased 20 per cent. No vascular remains were found. The left eye and both fundi were normal. There was no evidence of syphilis. The continued freedom of the fellow eye now that eight years have elapsed since the original attack provides a good example of the unilaterality of this complication.

The above cases were under the care of Sir John Parsons, to whom I am indebted for permission to publish them.

Comment.

Similar corneal involvement in malaria and mumps.—Malaria has long been known to share with influenza the capacity to produce herpetic keratitis, followed by dendritic ulceration of the cornea. It is interesting to note that these two diseases can both attack also the substantia propria, for Maxwell[1] has reported central interstitial or discoid keratitis as an occasional complication of malaria. Lunsgaard[2] has recorded two cases of acute infiltration of the superficial and middle layers of the corneal substance arising during the second week of an attack of mumps. He remarks on the associated roughening of the epithelium, but found no involvement of the iris.

Post-influenzal acute parenchymatous keratitis without iridocyclitis.—In the literature concerning the ocular manifestations of influenza I have not so far found any reference to acute parenchymatous keratitis accompanied by a definite iridocyclitis. Pflüger[3] saw two cases of central infiltration of the corneal substance, both of them unilateral, following influenza in healthy males who provided no evidence of trauma, syphilis, or previous eye trouble. He makes no mention, however, of any accompanying iridocyclitis. Cosse[4] recognised parenchymatous keratitis as a possible complication. Rampoldi[5] saw corneal infiltration several times among a long series of cases occurring during an influenza epidemic, and thrice observed relapsing parenchymatous keratitis of the syphilitic variety. It seems appropriate here to mention that none of the cases which I examined showed any of that deep vascularisation which would make one suspect a syphilitic origin.

Neuropathic factor.—Perhaps neuropathic disturbances play their part in producing this affection of the cornea. Influenza can do damage, either directly or through the spread of inflammation from adjacent meninges, to the Gasserian ganglion or to the first division of the fifth cranial nerve. Monbrun[6] saw many cases of neuroparalytic keratitis during the 1918–19 epidemic. These were characterised by complete anæsthesia of the cornea. Certainly there was sooner or later a disturbance of corneal sensation in most of the cases that I examined, but no conclusion could be legitimately drawn therefrom. When the cornea is afflicted with ulceration of its surface or acute infiltration of its deeper layers, then inferences derived from its degree of sensibility are apt to be fallacious.

Summary.

The main features of post-influenzal acute parenchymatous keratitis are briefly these: (1) it occurs in the stage of convalescence; (2) it is unilateral; (3) iridocyclitis accompanies it, and is prone to relapse; and (4) the anterior and middle layers of the substantia propria are chiefly involved, but epithelial erosion may also occur.

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THE ACTION OF LIVER PREPARATIONS IN DIABETES.

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AND

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Blotner and Murphy's observations that the oral administration of liver[1] or of a particular liver concentrate[2] causes a lowering of the blood-sugar appeared to be of such practical importance that attempts have naturally been made to repeat them. Thus, de Pencier, Soskin, and Best[3] obtained *no* evidence that the ingestion of raw liver lowers the blood-sugar of normal dogs or that a lowering of blood-sugar or sugar excretion occurs in depancreatised dogs. This latter finding is of importance, since Macleod[4] considers that in the laboratory the depancreatised animal is necessarily the final court of appeal when judging the merits of a substitute for insulin. Murlin, Pierce, and Gregg[5] expressed the belief that the effect of liver feeding in diabetes as reported by Blotner and Murphy is due to the insulin which the liver contains, a suggestion which the work of de Pencier et al. failed to substantiate. Bowen[6] found no evidence of a hypoglycæmic action of liver in a patient suffering from combined diabetes and pernicious anæmia, and Lawrence[7] has now reported that he was unable to detect any lowering of the blood-sugar of a diabetic after the oral administration of liver extract prepared as described by Blotner and Murphy in doses equivalent to 2 lb. of liver. According to Lombardi,[8] however, liver pulp appears to contain a hypoglycæmic substance.

We therefore think it may be of interest to record that we have carried out Blotner and Murphy's directions for the preparation of this special extract of liver on several occasions, and have consistently found that the extract was quite ineffective in lowering the blood-sugar of normal rabbits when administered in suspension by stomach-tube in doses equivalent to one-tenth of a pound of liver, a quantity which, according to Blotner and Murphy, is equivalent to about one unit of insulin. In our experience an injection of one unit of insulin produces a considerable fall in blood-sugar in the type of rabbits usually used for insulin assay.

Extracts were prepared from both fresh and frozen liver by the Blotner and Murphy process and extraction periods of both 12 and 48 hours were tried, but in no case was any hypoglycæmic effect observed. Liver Extract (Boots), prepared by the Medical Research Council's process (see THE LANCET, 1928, ii., 514), was also found to have no hypoglycæmic action. In fact, in practically all cases a slight but definite hyperglycæmia resulted. This is seen from the Table, which gives a few typical results compared with the blood-sugar fall obtained with the same rabbits following an injection of 1 unit of insulin.

Comparative Results.

		E1.	A.	E2.	A.	E3.	A.	E4.	A.
Rabbit.		35	35	66	66	75	75	17	17
Blood-sugars (mgms. per 100 c.cm.)	Fasting ..	115	121	97	115	108	127	123	105
	1 hour ..	138	71	145	58	138	78	125	93
	2 hours ..	134	57	143	50	140	77	137	49
	3 ,, .	133	70	136	54	137	77	120	50
	4 ,, ..	128	101	137	79	131	105	114	53
	5 ,, ..	136	116	125	84	147	116	118	64
	6 ,, ..	130	—	110	—	125	—	125	—

E1 = Extract 1.—Fresh liver extracted 48 hours } Blotner and
E2 = Extract 2.—Frozen ,, ,, 12 ,, } Murphy's
E3 = Extract 3.—Fresh ,, ,, 12 ,, } process.
E4 = Extract 4.—Liver Extract (Boots); Medical Research Council's process.

A = 1 unit insulin.

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CLINICAL AND LABORATORY NOTES

A NEW CLINICAL METHOD FOR THE ESTIMATION OF PROTEIN IN URINE.

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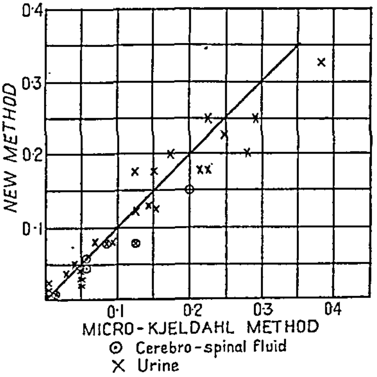
(*From the Medical Unit, The London Hospital.*)

MOST of the methods of estimation of the protein content of urine in current use suffer from some disadvantage, either from unknown limits of error, or in the amount of time and skill required to carry them out. Determination by the micro-Kjeldahl method of the total and non-protein nitrogen, with calculation of the protein by difference, is satisfactory, but is laborious, and not very accurate when the protein N difference is small and the total and non-protein nitrogen amounts are large. The following method was devised in the course of work on the excretion of protein in nephritis, when a large number of analyses were required. It has been found to be simple and quick, and accurate enough for this and other purposes. It has also been found useful for protein nitrogen determinations in cerebro-spinal fluid. It can be done by a technician in three to four minutes.

Principle.—The urine is mixed with a carbon suspension and carbon and protein are simultaneously precipitated with trichloracetic acid. The greyness of the precipitate depends on the amount of protein, when the amount of carbon is constant. The tone is compared with standards.

Solutions required.—(*a*) Carbon suspension. The most convenient form is a 1 in 25 solution of "Higgins' Eternal Ink"[1] in distilled water. This is a black carbon fountain pen ink which has been a stable commercial product for over 30 years. It does not evaporate at a significant rate if kept in stoppered bottles. (*b*) Trichloracetic acid. 100 per cent. This concentration is greater than that often used for precipitation of proteins, but as a high concentration



Determinations of protein nitrogen by micro-Kjeldahl method and the new method. Readings in grammes of protein nitrogen per cent.

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[1] Sold by Chas. M. Higgins and Co., 16, Farringdon-avenue, London, E.C., and 271, Ninth-street, Brooklyn, N.Y., U.S.A.

is necessary when dealing with very alkaline urines, it is used as a routine. The final concentration in the tubes is 10 per cent.

Standards.[2]—These were prepared from horse serum, which was obtained commercially. The protein N content was determined by the micro-Kjeldahl method, and amounts containing 0·25, 0·5, 0·75, 1·0, 1·5, 2·0, 3·0, 4·0 mg. protein N respectively were measured into 3 by $\frac{3}{8}$ in. tubes, using a graduated 1 c.cm. pipette, standardised by the National Physical Laboratory. The volume in each tube was made up to 1 c.cm. with distilled water. To each was added 0·1 c.cm. of solution A, and 0·1 c.cm. of solution B, and after vigorous shaking, each was corked. They have shown no signs of change during six months' use. The standards correspond to 0·025, 0·050, 0·075, 0·100, 0·150, 0·200, 0·300, 0·400 g. of protein N per cent., respectively, under the conditions of the test. Tones of grey half-way between any two of these standards tubes can be easily recognised.

Standards made from photographic greys, and from mixtures of kaolin and lamp black, &c., have been tried but are not satisfactory, owing to the difficulty in reproducing the bluish tone of the grey.

Procedure.—Pipette 1 c.cm. urine (or cerebro-spinal fluid) into a tube 3 by $\frac{3}{8}$ in. Add 0·1 c.cm. solution A. Shake. Add 0·1 c.cm. solution B. Shake vigorously. Compare grey with standards and read off per cent. protein N.

Accuracy.—The figure shows a comparison of determinations by this and the micro-Kjeldahl methods on protein-containing urines. Determinations on a few cerebro-spinal fluids have been included. The personal error is small. Determinations made by me and by a technical assistant did not ever differ by more than 0·025 g. protein N per cent. in the lower ranges, and by 0·05 g. protein N per cent. in the higher. The accuracy is unaffected by artificial light. It is considered to be adequate for many clinical purposes.

I am greatly indebted to Prof. Arthur Ellis for advice and criticism, and to the Medical Research Council for maintenance and expenses grants.

A CASE OF SPONTANEOUS PNEUMOTHORAX.

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Cases of spontaneous pneumothorax arising during the course of manifest tuberculosis are not uncommon; cases arising in previously healthy persons are less frequent. It is well known that spontaneous pneumothorax may be the first sign of pulmonary tuberculosis—one of the dramatic modes of onset, like hæmoptysis. The following case seems worth recording on account of its benign character, and because the patient's family history on the one hand and his personal history on the other makes the cause doubtful.

The patient was a fairly well-developed youth of 19, previously healthy and of healthy habits, except for somewhat excessive cigarette smoking. His father died of pulmonary tuberculosis in 1927 after several years' illness; the paternal grandmother, uncle, and aunt also died of pulmonary tuberculosis. He worked in a garage.

On August 30th, while working on a car, he was suddenly seized with a gripping sensation referred to the lower end of the sternum. He had been eating pears, and described the feeling "as if a piece of pear had stuck on the way down." At first the symptoms were attributed to indigestion, but as the discomfort persisted and he became a little breathless he sent for Dr. E. Maberly, of Exeter. Dr. Maberly returned the same afternoon to make a more complete examination, and found a pleural rub in the left scapular and root regions. When in bed the patient was quite comfortable and not breathless. Knowing the family history, Dr. Maberly asked me to see the case with him. This I did on Sept. 1st, when examination revealed an apparently complete left-sided pneumothorax, the chief signs being absence of movement, hyper-resonance—especially at the axilla and base—absent breath sounds; with occasional metallic tinklings, the characteristic modification of vocal resonance, and the bell sound in perfection. Slight impairment of the right apex with prolonged expiratory phase was noted. There was no evidence of fluid on the affected side. Except for a little irritable, non-productive cough, and aching in the left shoulder, the patient felt quite well. Next day he was X rayed by Dr. D. Miller Muir, who reported that the left lung was completely collapsed and that the right lung showed increased root-shadows and lung-markings, with some abnormal opacities at the apex. The right side of the diaphragm moved normally, the left showing little movement. There was no sign of fluid. The heart was practically in the middle line (Fig. 1).

FIG. 1.

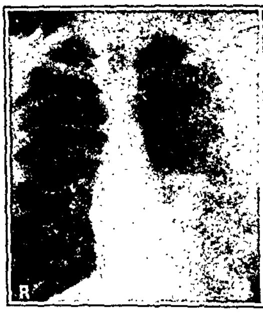
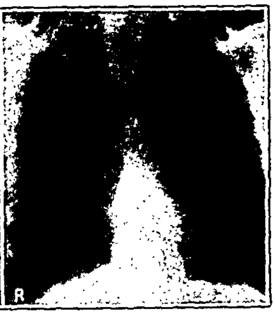


FIG. 2.



Recovery was uneventful. The patient was kept in bed until Sept. 16th, when he was allowed up for half an hour, the period being steadily increased until by the end of the month he was up nearly all day. The pulse and temperature were normal throughout and he felt well, except for a little palpitation. On Sept. 10th returning breath sounds were recognised in the upper part of the left chest, but signs of pneumothorax were still present, nor had the heart returned to its normal position. By Sept. 16th the bell sound had disappeared, but vocal resonance still had a metallic quality. On Sept. 24th the left chest was moving almost as well as the right, but there was still hyper-resonance in the axillary region. By Oct. 1st the lung was judged to have expanded, and this was confirmed by X ray examination on Oct. 7th. Dr. Miller Muir reported as follows: "The left lung now appears completely normal. The right lung does not look quite so congested as before, but it still shows increased root shadows, lung markings, and opacities at apex. The root of the left lung shows a few calcified opacities" (Fig. 2).

The patient's work necessitates lifting-strains, sometimes in a stooping position, but at the time of the accident he was, it is understood, lying across the top of a car. His family history makes infection with tuberculosis practically a certainty, and this is confirmed by the X ray findings, but there is no evidence of gross disease and no definite evidence that tuberculosis caused the spontaneous pneumothorax. Fortunately, in the course of a few years he will come into a business not requiring any physical exertion, so that he has been able to give up the garage work. The question of tuberculosis will be met by extended supervision and healthy living.

From the history of the case it may be judged that the rupture in the lung was small and collapse gradual, although finally complete. Such a case might quite easily be overlooked.

I am indebted to Dr. Maberly for asking me to see the case and permitting me to follow the convalescence, and to Dr. Miller Muir for radiological help.

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[2] Standards may be obtained from Messrs. Baird and Tatlock, Cross-street, Hatton-garden, London, E.C.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF ELECTROTHERAPEUTICS AND COMPARATIVE MEDICINE.

AT a combined meeting of these Sections on Dec. 19th, with Prof. WOODBURN MORISON, President of the Section of Electrotherapeutics, in the chair, a discussion on

Radiological Problems in Man and Animals

was opened by Major A. A. PRYER. X rays were seldom used for diagnosis in the horse, he said. Owing to the size of this animal, and the thickness of its tissues, examination with ordinary radiographic apparatus was seldom successful. Nevertheless, the help he had received in this way made him think it would be worth while to set up more powerful apparatus which would be available when required. He had himself examined 70 living horses with X rays, making a total of 280 exposures. The difficulties encountered in interpreting the radiograms were enhanced in the case of the horse, but these were likely to be less when a number of veterinary surgeons had had a special training in radiology. Only a small proportion of horses could be X rayed, for they mostly resisted; the solution lay in a knowledge of the horse and an expert handling of it. Mechanical restraint, as by the use of ropes, was useless. Before applying the rays the horse should have had definite exercise and been on low diet, for both these measures made it less restive. The giving of an ounce or two of chloral hydrate was also useful, and the ears should be plugged. Before X raying the foot the shoes should be removed, otherwise they would scatter the rays. Major Pryer used a transformer set, giving 42 milliampères, exposed for two seconds, and worked at a distance of 26 inches. Fast work was necessary owing to the risk of the horse moving during the exposure. Practically only the horse's limbs and feet could usefully be radiographed. Peptic ulcers in the horse he had tried to see by X rays, but that was a disease which the horse rarely suffered from, and it had no gall-bladder. The most valuable field for X rays in the horse was the feet. Navicular disease was very common and a frequent accompaniment of this was the presence of spurs, which might occur without detectable areas of caries. The fluorescent screen he had found impracticable for equine work; a high power current was needed and the darkness was irksome to the patient.

Dr. R. W. A. SALMOND showed a slide of a pigmy elephant, in which he detected a bullet by means of X rays. For examining valuable hunters a movable apparatus would probably be required; it should be equal to showing details of a fractured limb by an exposure of a second or two; it should be as free as possible from noise and should not be brought nearer to the animal than about 12 inches. When the rays did not reveal a stone which was present he thought the technique could generally be blamed. When parasites happened to be present in air-containing spaces or were calcified, they were more easily seen than otherwise. Hydatid cysts, cysticercus, and trichinosis were detectable by the rays. Radioscopic examination was likely to increase in the future in the case of domestic pets which were ailing, for their lives were deemed sufficiently valuable to justify the expense. This method of examination of the joints and skeletons of animals could be of great use in determining the effects of various vitamins in the foods, and he regarded it as a valuable supplementary means of diagnosis, though not as a substitute for the usual clinical methods. A step which would lead to a much fuller use of radioscopy in animals was the setting up of installations in veterinary colleges and in the Army veterinary hospitals, as well as in the departments of zoology and anatomy in universities.

Lieut.-Colonel MIDDLETON PERRY spoke from the standpoint of the regular practising veterinary surgeon. In dogs, cats, and small animals calculi and tumours could usually be felt, and X rays were not needed. He stressed the need for training in the interpretation of radiograms; otherwise grotesque mistakes could easily be made. At present the chief use of the rays to the veterinarian was to assist in the diagnosis of obscure fractures, gall-stones, and foreign bodies. In using ultra-violet rays for animals he could obtain good results without first removing the hair if he continually brushed it up by the hand during the exposure. It was difficult to know how much diathermy could be tolerated by any given animal.

Dr. J. B. KING spoke of the work which had been done in the use of the rays in studying the œstral cycle in animals. In mice, A. S. Parkes found that while irradiation caused disappearance of Graafian follicles it did not influence the œstral cycle. Injections of pituitary extract, however, caused greatly increased activity of the follicles and of ovulation; with potent preparations of œstrin œstrus could be produced at will, but many preparations soon lost their power.

Prof. J. McCUNN said it was possible to detect odontomes in the head of the horse by means of X rays. The navicular bone was the bugbear of the veterinary surgeon and the side view was the most valuable for the detection of abnormalities in it. Sometimes caries was found to have eroded that bone to the depth of one-eighth of an inch. In the dog X rays could be of much more service than in the horse; particularly was the radiogram valuable in the detection of fractures and dislocations. Puppies could not be well seen in the uterus by the rays, probably because of the interposition of the amniotic fluid. He had not yet seen a case of pyloric stenosis in the dog, and gastric and duodenal ulcers were also rare in them. It was common, however, for dogs to suffer from osteosarcoma of the lower end of the radius. The use of the rays for sterilisation was but little required in animals; much more often the desire was to render sterile animals fertile, and for this ultra-violet rays were employed. There was good scope for radiology in animals, the obstacle was the expense.

Dr. A. E. BARCLAY contended that the possibilities of X rays in veterinary practice and zoology had not yet been properly explored. Cats were found to be very temperamental, while dogs bolted their food. A good animal to study by this means was the domestic hen, and an informing study had been made on the hen as to the actual mechanism of swallowing. The food was moved along not by the propulsion exerted by muscles squeezing it but by creating, periodically, a closed cavity between larynx and pharynx and then opening it and so causing suction. Defæcation had been studied in a similar way.

Dr. J. F. BRAILSFORD said that for the radioscopic examination of animals it was necessary to have the largest available apparatus. As the value of the rays in veterinary practice became more widely recognised he thought many practitioners would become owners of portable sets.

Dr. ALBERT EIDINOW spoke of the lethal action of the rays employed. Both man and animals could be killed by heat, and in the laboratory animals had been killed by pure visible light when photo-dynamic substances were used. As ultra-violet rays acted only on the surface of living tissues the area of application should be bereft of hair. Animals killed by ultra-violet light showed areas of necrosis in the skin and gut, and a hæmorrhagic condition in the lung; also a condition which he took to be thrombosis of the coronary vessels.

Prof. G. H. WOOLDRIDGE said that X rays were more useful for diagnosis than for treatment, but only in supplement to the usual clinical methods. Training was needed for the correct interpretation of radiograms. Sometimes in proved navicular disease no spurs were present. Sometimes urinary calculi in the dog were so small that X rays failed to reveal them. He could see in the extended use of X rays in studying animals a reason for a less frequent use of experiments in the teaching of physiology, and there must be distinct progress when radiology was more thoroughly taken up by veterinarians.

Dr. CHALMERS WATSON averred that the chief value of the radiographic study of animal conditions was in regard to diseases due to defective nutrition. Recently he had been studying in this way changes occurring in the joints and skeleton generally in poultry on an experimental poultry farm.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

AT a meeting held at Sheffield on Nov. 28th, 1930, with Dr. J. W. BURNS, the President, in the chair, a paper on

Obstructive Inflammatory Lesions of the Uterus

was read by Prof. DANIEL DOUGAL (Manchester). His remarks were based on a study of ten cases, and he considered that two factors were present in each of them—namely, an infection of the uterus and appendages, and atresia of some part of the genital canal. Since the menses never made their appearance, one or both factors must have been present at puberty, and the presumption was either that both were acquired during childhood, or that one, the atresia, was congenital, and the other, the inflammatory lesion, was acquired at a later date. He divided his cases into the following groups: (*a*) three in which the uterine cavity was obliterated; (*b*) two in which the uterine cavity contained mucus or caseous material (hydrometra or pyometra); and (*c*) five in which the uterine cavity contained menstrual blood (hæmatometra). He concluded that tuberculosis or some other acute infection of childhood may produce atresia of some part of the genital canal, the result as regards disturbance of function depending upon the place of the obstruction. In tubercle, the tubes and uterine cornua were the parts commonly affected, and their canals either became completely obliterated or distended with pus or blood. If the cavity of the uterus was obliterated, retained secretions or blood might be found in the tubes or cornua, but if the atresia was at the level of the internal os, there would usually be hæmatometra or pyometra. When the obstruction was below the level of the cervix, hydrometra was an additional possibility. It would be interesting, he said, to know something about the frequency of vaginal discharge in these diseases, and, more important still, to see the cases about puberty, when it might be possible to find out the extent of the damage to the uterus and appendages. A working arrangement was needed between the hospitals dealing with children's and infectious diseases and the gynæcological hospitals, to ensure that the cases were kept under observation until the effects, if any, on reproductive life had been determined. It would then be possible to trace the origin, not only of the serious lesions which he had described, but also of those less severe in which the tubes are sealed up or the ovaries adherent.

The PRESIDENT and Dr. A. A. GEMMELL each described a case which, in the light of Prof. Dougal's remarks, suggested they were not simple atresia, but the results of chronic inflammatory diseases.

Pathological Specimens.

Prof. Dougal showed a specimen of chorion epithelioma of the uterus which from the history had suggested retained products of conception, but which, on histological examination, showed the typical features of chorion epithelioma—viz., Langhans cells, *syncytium and chorion* wandering cells. He regarded chorion epithelioma as a very rare tumour worthy of record; he had only come across four cases during the past 12 years.—Mr. ERIC STACEY (Sheffield) showed a specimen of a twin pregnancy in which the first was born alive, and the second was a large hydatidiform mole, weighing 10 lb. 4 oz.—A further specimen shown by Prof. DOUGAL was a carcinoma in one horn of a double uterus. This consisted of a bicornuate uterus with a double cervix. In the right horn there was an advanced growth which had infiltrated the muscle wall and broken through into the lower part of the left horn and both halves of the cervix.—Mr. N. L. EDWARDS (Derby) showed a specimen of an ectopic gestation in a hydrosalpinx. This consisted of the left tube and ovary with a mole in the isthmic portion of the tube and a small tear in the wall through which intraperitoneal bleeding had occurred. The tube distal to the mole was thickened and in a state of hydrosalpinx. He wondered whether the case could be one of direct internal migration of ovum.—Mr. P. MALPAS (Liverpool) showed a specimen of a large cervical fibroid weighing $10\frac{1}{2}$ lb. with extensive cystic changes; also a specimen of a cervical fibroid removed subsequent to radium treatment of a coexistent carcinoma cervicis. The sections in this case were of interest, in that there was no definite change in the cells of the fibroid.

PRESENTATION HOSPITAL BEDS.—A bed has been presented to the Sick Children's Hospital, Aberdeen, as a memorial to the Aberdeen unit of the Royal Army Medical Corps who served in the late war.—The Hammersmith and North Kensington Licensed Victuallers' and Beer-Sellers' Protection Association has had a bed in the Devonshire Ward of the West London Hospital endowed in its names "in appreciation of the valuable help received through the members."—A bed in Urmston (Lancs) Cottage Hospital was recently dedicated to the memory of Dr. George Ernest Fryer, who was honorary medical officer of the institution from its foundation in 1897 to his death at the beginning of 1930.

REVIEWS AND NOTICES OF BOOKS

Deep X Ray Therapy in Malignant Disease.

A Report of an Investigation Carried out from 1924–1929 under the direction of the St. Bartholomew's Hospital Cancer Research Committee. By WALTER M. LEVITT, M.B., D.M.R.E. London: John Murray. 1930. Pp. 128. 10*s.* 6*d.*

THE Radiotherapeutic Research Department began work in 1924. It was decided at the outset that cases should be limited to four groups, corresponding to the groups in which research in radium treatment was being carried out. These groups were malignant disease of (1) breast; (2) uterus; (3) upper air passages; (4) œsophagus. To these were subsequently added (5) rectum, and (6) thyroid gland. The procedure for admission was as follows:—

> Cases were referred to treatment through a member of the Research Committee in charge of the appropriate group. With the exception of a few cases, any case in which radium could be used was so treated. If unsuitable, or too extensive for radium, the case was admitted for deep X ray treatment, unless generalised. Microscopic examination was the rule.

The stage of the disease at the commencement of treatment varied from group to group. In the Breast group (50 cases) the disease was usually far advanced, owing to the preference given to radium treatment in the more favourable cases. This must be borne in mind in judging the results. The split intensive dose gave better results than the single intensive method; thus 8 out of 28 cases treated by the split dose method showed disappearance of all signs of disease, but this primary response was not obtained in any of the 10 cases treated by the single dose method. In the Uterus group (containing a higher proportion of early cases) the primary results were encouraging. In 12 out of 16 cases of cervical cancer complete primary disappearance of signs of tumour was obtained. Recurrences were, however, frequent, which were improved though apparently not cured by subsequent radium treatment. In 4 out of 6 cases of carcinoma of the body of the uterus, evidence of disease disappeared and two remained well after four years. In the largest group, 170 cases of malignant disease of the Upper Air Passages, the best results were obtained with palatal growths. Four out of 7 palatal cancers and two endotheliomata were apparently cured; sarcoma of the pharynx gave three apparent cures out of seven cases. Sarcoma and endothelioma of the tonsil reacted well; carcinoma badly. Of post-cricoid carcinomata, 3 out of 11 were apparently cured, others reacted badly. 132 cases in the centre group were treated by X rays only, of whom 15 per cent. are now reported free from evidence of disease. In the Œsophageal and Rectal cases the results were not encouraging. Of the 319 cases of all types included in the whole report, 15 per cent. are now without evidence of disease. Definite palliative improvement was obtained in 60 per cent. of the remaining cases. The nature and degree of this improvement is clearly described in the report. The author states in his conclusion that malignant growths, even when advanced, may be made to disappear by X ray treatment, with freedom from recurrence for four years or even permanently; that the risks involved and discomforts to the patient are very small; and that in certain cases combination of X rays and radium is probably superior to either method alone.

This very bare summary of the figures does scant justice to the book as a whole. We would particularly commend to radiologists the excellent notes on technique—for example, the description of the six-field method due to Finzi for the treatment of laryngeal carcinomata by the intensive split dose method. The author's views upon the relative value of the split dose and the single dose methods merit careful attention, and his suggestions as to the best methods of combining X rays and radium are valuable in view of the growing importance of this method. Noteworthy also is his definite statement that out-patients react less well and suffer more from after-effects than in-patients. It is clear that adequate X ray treatment is hampered in this country by lack of bed accommodation. The statistical tables are numerous and very clearly arranged, giving the required information at a glance. Each is followed by a short analysis and comment. Every patient has been followed up and the ultimate result in each case is given.

Surgeons and practitioners will find this volume invaluable as a work of reference. The style is straightforward and free from technicalities. In scientific outlook, in freedom from bias, and in exact statement of facts Dr. Levitt's work compares very favourably with anything which has yet appeared on the subject.

Student's Handbook of Surgical Operations.

By Sir FREDERICK TREVES, F.R.C.S. Fifth edition. Revised by C. P. WAKELEY, F.R.C.S., F.R.S., Surgeon to King's College Hospital. London: Cassell and Co., Ltd. 1930. Pp. 535. 10*s.* 6*d.*

THE task of revising and modernising a text-book written nearly 40 years ago is no easy one if an attempt is made to preserve the traditional character of the book. Indeed, it is very questionable whether the outlook of the present-day surgeon has not changed to such a degree as to make the effort undesirable. It is the same sort of difficulty that is met with in trying to modernise a Shakespearean play. Nevertheless, Mr. Wakeley has accomplished the seemingly impossible. He has produced a book almost freed from the trammels of the past. A careful survey of it confirms the impression that it forms a very good guide to the student taking his operative surgery course. The number of illustrations has been very much increased and such subjects of recent interest as treatment by radium have been introduced. If one or two small points can be singled out for revision in future editions they are not of sufficient importance to detract from the general value of the book. It is to be hoped that at least two methods of excision for carcinoma of the rectum will be included in the future. At present there is none, yet the excessively rare operation for extirpation of an œsophageal pouch is described. Stovaine is recommended for spinal anæsthesia, although this has been given up in favour of novocain or percain by most recent exponents of the method. Ligature of the inferior thyroid artery is not described although it is an every-day operation. We find a good account of ligature of the innominate, a procedure which few surgeons have even seen and which we are assured is never the subject of an examination question. He recommends division of the thyroid isthmus early in the operation pharynx and then opening it and so causing suction. Defæcation had been studied in a similar way.

Dr. J. F. Brailsford said that for the radioscopic examination of animals it was necessary to have the largest available apparatus. As the value of the rays in veterinary practice became more widely recognised he thought many practitioners would become owners of portable sets.

Dr. Albert Eidinow spoke of the lethal action of the rays employed. Both man and animals could be killed by heat, and in the laboratory animals had been killed by pure visible light when photo-dynamic substances were used. As ultra-violet rays acted only on the surface of living tissues the area of application should be bereft of hair. Animals killed by ultra-violet light showed areas of necrosis in the skin and gut, and a hæmorrhagic condition in the lung; also a condition which he took to be thrombosis of the coronary vessels.

Prof. G. H. Wooldridge said that X rays were more useful for diagnosis than for treatment, but only in supplement to the usual clinical methods. Training was needed for the correct interpretation of radiograms. Sometimes in proved navicular disease no spurs were present. Sometimes urinary calculi in the dog were so small that X rays failed to reveal them. He could see in the extended use of X rays in studying animals a reason for a less frequent use of experiments in the teaching of physiology, and there must be distinct progress when radiology was more thoroughly taken up by veterinarians.

Dr. Chalmers Watson averred that the chief value of the radiographic study of animal conditions was in regard to diseases due to defective nutrition. Recently he had been studying in this way changes occurring in the joints and skeleton generally in poultry on an experimental poultry farm.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

At a meeting held at Sheffield on Nov. 28th, 1930, with Dr. J. W. Burns, the President, in the chair, a paper on

Obstructive Inflammatory Lesions of the Uterus

was read by Prof. Daniel Dougal (Manchester). His remarks were based on a study of ten cases, and he considered that two factors were present in each of them—namely, an infection of the uterus and appendages, and atresia of some part of the genital canal. Since the menses never made their appearance, one or both factors must have been present at puberty, and the presumption was either that both were acquired during childhood, or that one, the atresia, was congenital, and the other, the inflammatory lesion, was acquired at a later date. He divided his cases into the following groups: (*a*) three in which the uterine cavity was obliterated; (*b*) two in which the uterine cavity contained mucus or caseous material (hydrometra or pyometra); and (*c*) five in which the uterine cavity contained menstrual blood (hæmatometra). He concluded that tuberculosis or some other acute infection of childhood may produce atresia of some part of the genital canal, the result as regards disturbance of function depending upon the place of the obstruction. In tubercle, the tubes and uterine cornua were the parts commonly affected, and their canals either became completely obliterated or distended with pus or blood. If the cavity of the uterus was obliterated, retained secretions or blood might be found in the tubes or cornua, but if the atresia was at the level of the internal os, there would usually be hæmatometra or pyometra. When the obstruction was below the level of the cervix, hydrometra was an additional possibility. It would be interesting, he said, to know something about the frequency of vaginal discharge in these diseases, and, more important still, to see the cases about puberty, when it might be possible to find out the extent of the damage to the uterus and appendages. A working arrangement was needed between the hospitals dealing with children's and infectious diseases and the gynæcological hospitals, to ensure that the cases were kept under observation until the effects, if any, on reproductive life had been determined. It would then be possible to trace the origin, not only of the serious lesions which he had described, but also of those less severe in which the tubes are sealed up or the ovaries adherent.

The President and Dr. A. A. Gemmell each described a case which, in the light of Prof. Dougal's remarks, suggested they were not simple atresia, but the results of chronic inflammatory diseases.

Pathological Specimens.

Prof. Dougal showed a specimen of chorion epithelioma of the uterus which from the history had suggested retained products of conception, but which, on histological examination, showed the typical features of chorion epithelioma—viz., Langhans cells, syncytium and chorion wandering cells. He regarded chorion epithelioma as a very rare tumour worthy of record; he had only come across four cases during the past 12 years.—Mr. Eric Stacey (Sheffield) showed a specimen of a twin pregnancy in which the first was born alive, and the second was a large hydatidiform mole, weighing 10 lb. 4 oz.—A further specimen shown by Prof. Dougal was a carcinoma in one horn of a double uterus. This consisted of a bicornuate uterus with a double cervix. In the right horn there was an advanced growth which had infiltrated the muscle wall and broken through into the lower part of the left horn and both halves of the cervix.—Mr. N. L. Edwards (Derby) showed a specimen of an ectopic gestation in a hydrosalpinx. This consisted of the left tube and ovary with a mole in the isthmic portion of the tube and a small tear in the wall through which intraperitoneal bleeding had occurred. The tube distal to the mole was thickened and in a state of hydrosalpinx. He wondered whether the case could be one of direct internal migration of ovum.—Mr. P. Malpas (Liverpool) showed a specimen of a large cervical fibroid weighing 10½ lb. with extensive cystic changes; also a specimen of a cervical fibroid removed subsequent to radium treatment of a coexistent carcinoma cervicis. The sections in this case were of interest, in that there was no definite change in the cells of the fibroid.

Presentation Hospital Beds.—A bed has been presented to the Sick Children's Hospital, Aberdeen, as a memorial to the Aberdeen unit of the Royal Army Medical Corps who served in the late war.—The Hammersmith and North Kensington Licensed Victuallers' and Beer-Sellers' Protection Association has had a bed in the Devonshire Ward of the West London Hospital endowed in its names "in appreciation of the valuable help received through the members."—A bed in Urmston (Lancs) Cottage Hospital was recently dedicated to the memory of Dr. George Ernest Fryer, who was honorary medical officer of the institution from its foundation in 1897 to his death at the beginning of 1930.

THE LANCET.

LONDON: SATURDAY, JANUARY 3, 1931.

THE STABILITY OF B C G.

The prophylactic administration of B C G vaccine by mouth to new-born infants, which has now been carried out in over 200,000 cases on the continent, has had a spectacular result which, at first sight, appears convincing. No ill-effects have been experienced at the time of vaccination—the Lübeck inquiry would have fastened on them had any been recorded—whilst the published figures show, in the case of infants born in a tuberculous household, that the infants have succumbed to tuberculosis with less frequency than have unvaccinated children in the same environment. The figures, however, have not been presented in a way that satisfies the trained statistician, and it may be long before valid conclusions can be drawn. The vaccine, as everyone knows, consists of living tubercle bacilli of extremely low virulence which, it is believed, do not produce progressive tuberculosis. When we turn to the question of the fate of these living bacilli after ingestion by the infants, we are however on insecure ground. Numerous records have shown that a positive tuberculin reaction is acquired by the infants within a few weeks, a fact which would suggest that some tissue response takes place, but not much information is yet available as to the actual fate of the bacilli. Do they penetrate into the intestinal mucous membrane, and if so with what result? Are they immediately destroyed by the tissues or do they produce in the mesenteric glands the non-progressive lesions reported as sometimes occurring in laboratory animals, gradually dying out in the course of a year or two, but producing immunity meanwhile? The number of children vaccinated by subcutaneous or intramuscular routes where the effects can be seen is small, but it appears that local abscesses sometimes result, and where these occur we cannot be sure that more untoward results may not follow. Indeed we think there is evidence from some of the reported cases that untoward results have occasionally followed. But whether similar effects may sometimes occur in mesenteric glands after oral ingestion it is impossible to say, since the glands are not readily accessible to examination.

The researches carried out on laboratory animals with the vaccine have led to somewhat varying results. In the majority of instances the vaccine has been given by the subcutaneous route, and here again in some cases local or non-progressive tuberculous lesions have resulted. Every now and then an instance is reported of progressive tuberculosis becoming generalised and ending fatally. We publish on another page a record of work of this kind done at the Oxford School of Pathology by a new technique. In the course of experimental work Prof. Dreyer noted that a certain human strain of tubercle bacillus, which had been subcultured on artificial media for several years, would grow on ordinary veal-peptone broth, and, further, that if the inoculum, instead of being floated on the surface of the broth, was submerged in its depths, growth occurred in the form of small granules at the bottom of the flask, the supernatant fluid remaining quite clear. The method results in growth which is very slow and never abundant, but occasionally the tubercle bacilli grown in this manner are much more virulent than when grown on current media. Prof. Dreyer has applied this technique to the bacillus of Calmette-Guérin. Two strains were investigated, one of them, B C G (1), from the National Institute for Medical Research, which up to the time of experimentation had been completely avirulent for laboratory animals; the other, B C G (359), received from Prof. Calmette through the Medical Research Council. Deep broth subcultures of B C G (1) produced generalised tuberculosis in all of 28 guinea-pigs inoculated intraperitoneally, and severe progressive tuberculosis in all of 12 rabbits inoculated intravenously. In the case of B C G (359) only one of 20 guinea-pigs inoculated with the original culture, as received from the Pasteur Institute, had localised caseous tuberculous lesions, and another had several healing lesions. Deep broth subcultures of this strain showed progressive tuberculous lesions in a few cases, but the series has not yet been concluded. The evidence so far obtained suggests, however, that B C G is not so stable in culture as was at first believed. Two cultures, from a rabbit and a guinea-pig respectively, in the series of animals infected with deep broth cultures of B C G (1) were submitted by Prof. Dreyer to Dr. Stanley Griffith for an opinion; he reported that the cultures were mammalian but did not conform exactly either to the human or bovine type. Dr. Griffith found both strains virulent for the guinea-pig, producing typical general tuberculosis, but of relatively low virulence for the rabbit with effects not exceeding in severity those which are sometimes produced by standard human bacilli. Dr. Griffith considered the number of tests too small to base a definite conclusion upon, but the results are irregular and confusing.

Prof. Dreyer is in agreement with Petroff and Watson that in the great majority of experiments on the pathogenicity of B C G the animals have been killed too soon after inoculation. A prolonged latent stage in an apparently benign infection cannot be taken as a criterion of the final outcome—a point to be borne in mind when drawing an analogy with vaccinated children. Prof. Dreyer discusses the results obtained with a B C G strain in which Petroff isolated smooth and rough colonies, the lesions produced in animals by the rough colonies showing a tendency to heal and those produced by the smooth colonies invariably showing progressive tuberculosis in guinea-pigs and occasionally in rabbits. Petroff's virulent strain was produced by growing the culture in other than the glycerin-bile-potato medium recommended by Calmette:

and it has been suggested that admixture with another strain of tubercle bacillus may have occurred. At all events we are not aware that Petroff's results have yet been fully confirmed. The important point, however, is that Prof. Dreyer has now shown, what had previously been claimed by Malkani and other workers, that if B C G be subcultured on other media than the glycerin-bile-potato, to which Calmette has accustomed it for many years, virulent subcultures can be obtained; all this strengthens Petroff's contention that the human body cannot be compared to glycerin-bile-potato as a medium for the growth of B C G. The question remains open as to whether, as Prof. Dreyer indicates, pathogenic variants of B C G may not arise from time to time. There is a strong feeling in this country that the stability of the B C G strain should be more carefully substantiated before it is used as a vaccine. The same caution has been shown by the central German health authority in reaffirming its disapproval of the use of living bacilli for prophylactic treatment in human beings until our experience is more precise. The decision was no doubt a result of Prof. Bruno Lange's report[1] on the Lübeck incident which, while discarding any assumption that the Lübeck disaster was caused by a spontaneous rise in virulence of the B C G vaccine, yet left it open whether or no under laboratory conditions the strain might not again become virulent.

CAPITAL PUNISHMENT.

By recommending the abolition of the death penalty for an experimental period of five years, the report from the Select Committee on Capital Punishment (summarised on p. 44) has opened up again a problem that involves totally different questions. We may assume that punishment of any kind originally depended upon the principle of an eye for an eye, a principle so deeply rooted that it appears to many people as an axiom in need of no justification, and is defended with the vigour that marks the defence of any strong belief accepted without question. Nevertheless, the origin of the principle is only occasionally admitted and it is often supported by an appeal to a secondary consideration, the need to protect society. This protection is sought in the salutary effect of punishment upon the offender or—the only social benefit claimed for the death penalty—in its deterrent effect upon those who, in the absence of the penalty, would be tempted into crime. The idea of a lethal chamber for people unfit to be members of our social order is sometimes put forward, but has no relation to ceremonial hanging as a punishment.

That the salutary effect of punishment is proportionate to its severity was long taken for granted, and only in recent years has the study of penology led to a reconsideration of the assumption. As a result many changes have been made, and in the handling of first offenders we try to avoid that punishment which was at one time *automatically* inflicted. Crime has not increased as a consequence, while the lightening of penalties has made almost incredible the savage punishments inflicted a century ago and then regarded as necessary. The lex talionis, which satisfies something primitive in our nature, thus serving as a force in social development, is no longer the main guiding principle of our penal laws. These now have as their aim not merely the infliction of a punishment that will cancel out the offence, though that element is still present, but rather the reformation of the offender. We still have some distance to travel before we shall have applied to criminal procedures all our recently acquired knowledge of the motives underlying conduct, yet it is recognised that savage punishments defeat the immediate aim of reforming the offender, and are lacking in their supposed deterrent effect upon others. There are brutal natures for whom severe punishment still seems necessary, but even in such cases the automatic infliction of the punishment has results that need watching, for they may not be what we expect. The terrorising effect of punishment, or of the prospect of it, must not lead us to picture the potential criminal weighing the pros and cons of an intended crime and then coming to a decision; the experienced offender might do that, but then it is probably a business question affecting his livelihood.

Capital punishment has two functions, first to satisfy the desire for vengeance upon the particular criminal, and, secondly, to terrorise other would-be murderers so that they will refrain from their premeditated crime. The deliberate intent to murder is so foreign to us that we can scarcely judge of the thoughts of a man bent on such a deed, but it is possible to imagine him salving such conscience as he might possess by reasoning that he is taking the risk of the same fate as his victim. This is one argument of those who would deny the deterrent effect of the hanging penalty, and the frequent combination of murder with suicide gives plausibility to it. Perhaps an execution that made the greatest possible appeal to the sentiment of social vengeance was that of the murderer of police-constable Gutteridge three years ago. This deliberate and brutal crime was committed by a man who had already undergone severe punishment at the hands of the law and must have had a full realisation of its power. In spite of his attempts at suicide in prison he was duly hanged, and the sentiment of vengeance was appeased. It is difficult to recall a case in which hanging was more justifiable or in which the death penalty as a deterrent had been more futile, for, unlike many murderers, this man may be assumed to have faced the probable consequence of his action. So great was the public's satisfaction at his execution that it ignored the question of how it came about that such a criminal could mature in our midst, a question the answer to which is of more importance than the hanging of half a dozen murderers. Every murder is an example of the failure of the death penalty to deter, and we have no knowledge that can justify the *assumption* that the removal of a penalty surviving from more barbaric times will be followed by an increase of the crime it is supposed to prevent. We must keep separate our two motives for inflicting the death penalty, the sentimental desire to satisfy the lex talionis, and the practical aim of preventing more murder. The first motive we can weigh in the balance against what we like to believe are the more humane sentiments of the present day, and as to the second, we may look to the experience of other countries where the penalty has been abolished. There is no reason to fear that the experimental abolition proposed by the Committee will lead anyone to consider the advantages that penal servitude has over hanging before deciding to kill a fellow man.

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[1] Zeitschrift für Tuberkulose, 1930, lix., 1.

A RESEARCH INSTITUTE FOR SURGEONS.

A POLICY recently initiated by the Council of the Royal College of Surgeons of England has not received the attention it deserves, for if it prospers it will give England what it now lacks—an institute where surgeons can carry out experimental research bearing on their art. At the present moment there are young men aiming at becoming members of the surgical staffs of our teaching hospitals who have ideas which they wish to put to the test of experiment, but are frustrated by two obstacles. The first is lack of income; to make a living they have to devote their time to "coaching" and to routine duties; the second is that there is no institute to provide them with the means of carrying out their inquiries. The policy which is now being carried out by the Council of the College, under the enterprising leadership of its President, aims at removing both of these handicaps. During the past year the Council has built and equipped two laboratories for surgical research in the College buildings; these, we learn, are now occupied. Research scholarships have been instituted. Lord MOYNIHAN appealed to Lord BEAVERBROOK, Lord MELCHETT, Sir BERNHARD BARON; each endowed a scholarship for seven years—yielding the holder £500 per annum. The Council instituted a scholarship of the same value. Two scholars have been appointed; two more will be elected early in 1931. It has also been determined, wisely we think, that the men who hold such scholarships should retain their connexion with their hospitals. Thus the College has deliberately embarked on a scheme which it is hoped will ultimately make London a centre of surgical research for the Empire.

Only those who are familiar with the history of our English College and of its great museum will appreciate what this new departure in policy implies. Hitherto the official attitude has been not to devise experiments but to wait until disease has made them in the human body, and from these undesigned experiments draw such conclusions as could be warranted. Ever since 1800, when the College built its museum on the south side of Lincoln's Inn-fields to house the Hunterian collection, the Council and its officers have been content to preserve and to study merely the savage records of disease; their museum has become the greatest medical treasury in the world. It is true that there have been officers connected with the museum such as the late Prof. S. G. SHATTOCK, who did resort to deliberate experiment to throw light on morbid processes, but such inquiries were made outside the College. Thus it remains true that in the main the policy pursued has been one of patient watching and waiting for disease to make its own revelations. Henceforth the Council is committed to active research as well as to passive inquiry as a means of advancing the surgeon's power as healer. Nor in adopting this extension of policy are our surgical leaders blind to the fact that the gift of devising and carrying out experiments so that they will elucidate the processes of disease is one of the rarest endowments—one given only to a fortunate few. It is certainly important for the progress of surgery that such gifted young men should be given their opportunity.

The scheme as outlined marks only the beginning of a movement. There are portents which lead one to suspect that there will be a great extension in the near future. Mr. G. BUCKSTON BROWNE, who two years ago presented Darwin's home at Downe, Kent—only 16 miles from Charing Cross—to the British Association as a national possession has the establishment of a surgical institute very much at heart. He is desirous that part of the land attached to Darwin's home may be used for the erection of such an institute—one to be conducted as an extension of the scheme already established in connexion with the museum. Lord MOYNIHAN, mindful of the fact that John Hunter advanced surgery as much by experiments conducted at his farm at Earl's Court as by his clinical and pathological observations at St. George's Hospital, is also desirous of seeing an "Earl's Court" instituted in connexion with the College at Charles Darwin's old home. With such support behind it we have every reason to hope and believe that a research institute for surgeons will materialise in the near future.

MODERN PSYCHOLOGY AND THE PRACTITIONER.

THE development of modern psychology has been too sudden for easy acceptance. It has not so much grown by simple accretion from previous knowledge, as been hacked anew from bedrock by rough tools. Still far from complete, its present form, though strange and sometimes at first sight even revolting when judged by classical standards, is convincing enough to make it seem impossible that a pretty statue of reason on a pedestal will ever again be accepted in its place. The dethronement of reason and the recognition of wishes, direct and indirect, as the most powerful, if not the only motives influencing conduct—these things form corollaries of the new conception of the mind and the mechanisms by which it functions. They are now widely accepted, although still largely ignored by the law-courts and other fields of scientific investigation. Since the scientific writers mostly represent thinking types, whether extrovert or introvert, the criteria by which scientific evidence is weighed are not seriously menaced. But there are signs that the law-courts throughout the world will sooner or later have to adjust their procedure in accordance with the deeper knowledge of mental processes revealed by analytical research. The attitude of the intelligentsia of all civilised countries to these matters is well summarised in the following passage taken from the *Week End Review* of Nov. 27th, 1930.

> "Sadism, and masochism, œdipus and inferiority complexes, homosexual and mother fixations, all these have passed out, in the last few years of mental revolution, from the psychological study into the street. For a little while we were shocked, but already to the whole gamut we are become immune. We take them for granted like peristalsis."

Many doctors are quite aware that their busy life has prevented them from appreciating a change of outlook which may be familiar to large sections of their patients. Some doctors remain aloof and disapproving. Most regret that they have had no time to read and assess for themselves the bulky tomes which until quite recent years were the only reliable source of information on the schools of thought which have arisen since Freud revolutionised psychological medicine. For doctors who wish to study mainly abnormal psychology and its treatment Dr. Bernard Hart,[1] more recently Dr. Maurice Nicoll [2] and Dr. Emanuel Miller [3] among others have provided excellent short surveys. Current ideas on the mechanism of the normal mind are less easy to come by. A clear and simple introduction to this difficult subject was given in a course of lectures recently delivered by Dr. E. Graham Howe on behalf of the Tavistock Clinic, and noticed in The Lancet of Dec. 20th. We have now arranged for the publication of these 12 lectures in serial form in The Lancet, the first lecture appearing in this issue. The attendance at these lectures and at those on Type Psychology which followed them on Wednesday afternoons was maintained throughout the session. We have reason to believe that the wider audience to which they can appeal in our columns will be equally appreciative of the directness and fairness of Dr. Howe's exposition of a most difficult subject. There seems no doubt that if the family doctor is to resume the friendly rôle even of guide, let alone that of philosopher, in behalf of his patients, he will have to subdue such prejudices as his training in organic neurology may have given him and master, even if he does not altogether accept, current ideas on psychology.

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[1] Psychopathology. London: Cambridge University Press. 1929. The Psychology of Insanity. Same publishers and date. Pp. 176. *3s. 6d.*

[2] Psychopathology: A Survey of Modern Approaches. London: *Baillière, Tindall and Cox.* 1930.

[3] Modern Psychotherapy. London: Jonathan Cape 1930.

ANNOTATIONS

SERUM TREATMENT OF PNEUMONIA.

The search for a specific remedy for lobar pneumonia has been complicated by the fact that the causal organism, the pneumococcus, comprises several distinct serological types. For practical purposes three definite groups are recognised (1, 2, and 3), while all the other strains are classed together in a heterogeneous group 4. An antipneumococcal serum will only agglutinate strains of the same group, and must therefore be appropriate in every case. It has proved difficult, moreover, to prepare an effective serum because the pneumococcus does not produce either exotoxin or endotoxin, and its antisera must therefore be antibacterial instead of antitoxic. Attempts to make a serum of this kind have been partially successful for types 1 and 2, which are responsible for 50 to 75 per cent. of all cases of pneumonia, but so far no serum has been of any value against the other types. Furthermore, the serum available has been of very low titre, so that very large amounts are necessary to get any therapeutic effect, and it must be given soon after the onset of the disease if it is to do good. Hence it is not surprising that most clinicians prefer to keep to old-fashioned methods rather than worry their patients, who are very ill, with frequent intravenous injections—not to mention the dangers incidental to large doses of horse serum.

Five years ago L. D. Felton succeeded in preparing a more concentrated polyvalent antiserum by immunising horses with types 1, 2, and 3. The serum was obtained in the usual way, but the immune bodies were reprecipitated by distilled water and were then dissolved again in a concentrate said to be 10 to 20 times as strong. The amount of foreign protein in this serum was much reduced, and the likelihood of so-called anaphylactic reactions was thereby lessened. The serum was standardised in units, a unit being the amount of serum that will protect a mouse against a million fatal doses of pneumococcal culture, and the relative potency for the three types is shown by the fact that a given amount of serum will contain 2000 units against types 1 and 2, and 300 units against type 3. R. L. Cecil[1] tried the remedy in 414 alternate consecutive pneumonia cases admitted to the Bellevue Hospital, giving it immediately after diagnosis, without waiting for the organism to be typed, and his results suggested that it definitely reduced the mortality in types 1 and 2. The mortality in type 3 was 10 per cent. more in the treated cases than in the controls, while in type 4 it was 10 per cent. less. More recently, with Plummer,[2] Cecil has published another report from the Bellevue Hospital in which it is shown that Felton's serum is more than ten times as potent as unconcentrated serum and that in a series of 239 cases of type 1 infection treated with serum the mortality was only 20 per cent. compared with 30 per cent. in a control series of 234. They further found that this mortality was reduced to 12 per cent. when the cases were treated within three days of onset. In their opinion the use of this serum has now passed beyond the experimental stage, and they think that if it is given early in adequate amount its beneficial effects are certain. To some extent this claim is supported by the papers from Scotland published in our last issue. In Edinburgh Felton's serum was given to every second case of lobar pneumonia admitted to the Royal Infirmary over a period of ten weeks, and comparison with the alternate controls suggests that it is definitely remedial in types 1 and 2. Apart from lower mortality, it was noticed that half the serum-treated cases had their crises on or before the fifth day—the proportion among the controls was under 20 per cent.—and certain cases seemed more comfortable for their treatment, although their illness was not shortened. At Glasgow Royal Infirmary the serum was given to 58 consecutive cases of lobar pneumonia immediately after admission and before they had been typed. These cases were compared with a control series from previous years who, but for serum, had been treated in just the same way. The age-incidence in the two groups corresponded very closely, and it was again found that the mortality in the serum-treated group was appreciably less in both male and female patients. Both in the Edinburgh and Glasgow series there were anaphylactic reactions in several patients, despite preliminary tests to detect supersensitiveness.

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[1] New Eng. Jour. of Med., 1928, cxcix., 415 ; see The Lancet 1928, ii., 766.

[2] Jour. Amer. Med. Assoc., Nov. 22nd, 1930, p. 1548.

The considered conclusions from the two great Scottish schools are expressed with commendable discretion, and the writers hesitate to draw conclusions from their comparatively small material. Statistics about a disease like lobar pneumonia are liable to distortion by such factors as the age of the patients, a variation in virulence from year to year, the day of disease on which treatment begins, and the incidence of complications not due to the pneumococcus. None the less, so far as it goes, it is noteworthy that opinion on both sides of the Atlantic is agreed about the value of Felton's antiserum.

A PROBLEM OF THE HOP-FIELDS.

HOP-PICKING sets the county health authority in Kent a problem of some difficulty. To the rural areas around Maidstone and Tonbridge, with a population of 50,000, there come year by year in September 60,000 East-Londoners to pick the hops, reinforced, especially at week-ends, by another 40,000 or so of relatives and visitors, who act as though it is up to the hop-growers to provide free holiday and convalescent camps for all of them. As a rule the hop-growers do recognise their responsibilities to the pickers, although there are occasional prosecutions for failure to scavenge, to provide cooking arrangements, weather-proof huts, adequate water-supply, and sanitary accommodation. Among the exceptions mentioned by Dr. S. N. Galbraith, medical officer of health for the S.W. Kent united area, is a grower who has paid since 1926 over £70 in fines and costs, which would have gone a long way to carry out the needful instalments. Various voluntary organisations provide dispensaries and nurses for the sick, but a nice point has arisen as to who should provide hospital accommodation for infectious diseases. Dr. Galbraith points out that diseases which occur among the hoppers are mostly contracted in London and can readily be sent to the London fever hospitals. It would be unreasonable in his opinion for the rural districts to provide additional accommodation for a migration which lasts at most for one month each year. The case is not parallel with that of seaside resorts, whose population may be doubled by visitors for three to six months in the year. The help of the London County Council and the metropolitan borough councils has, however, been invoked hitherto without success. While the Ministry of Health does not give rulings on legal questions, it considers that in general the responsibility for dealing with infectious disease rests with the local authority in whose area the cases occur. The attempt to prevent infectious cases or their contacts from access to the camps has not met with much success, although some contacts were sent back last year. Londoners prefer, as Dr. Galbraith remarks, to have their sick in hospitals with which they are familiar, and do not like leaving their children behind in a rural hospital at the end of the picking season. The present practice, it seems, is apt to lead to the concealment of disease. Dr. Galbraith cites the case of a woman who infected her father with small-pox before leaving London, and subsequently infected her son aged 5 years in the camp. Mother and son travelled from the hop-fields to London by train and bus, and were then removed to the L.C.C. fever hospital. If she had reported sick on the farm, local small-pox accommodation must be provided at the expense of Kentish ratepayers. The problem should be susceptible to equitable compromise between the authorities concerned, for the hopper-camps, if properly sanified, should benefit both the health and the economic position of a large section of neediest Londoners.

ORAL ANTI-DIABETIC REMEDIES.

SINCE the discovery by von Mering and Minkowski in 1889 that the pancreas is intimately related to the causation of diabetes mellitus, countless workers have attempted to treat this disease with substances administered by mouth. Thus there is a long and it must be confessed dismal history of various pancreatic preparations which when given by mouth were claimed to effect a reduction in the blood-sugar and urine-sugar content. The commercial exploitation of this type of remedy formed a distressing chapter in the story of endocrinology, when, fortunately, the discovery of insulin gave such clear-cut results that these older preparations fell into deserved disrepute. Since then the problem has mainly centred round the oral administration of insulin itself, various attempts to solve it having been made by many reputable workers.[1] A new line of approach has been opened up by H. Blotner and W. P. Murphy,[2] who described the effect of liver feeding upon the blood-sugar, and maintained that a substance could be prepared from liver which was capable of reducing the blood-sugar. This was all the more remarkable since the action was definitely present when the liver or liver extract was administered orally. The hope was expressed that these substances might prove a valuable adjunct in the treatment of diabetes, and confirmation and report of their use has been anxiously awaited. Not long ago R. D. Lawrence in this journal[3] described a clinical experiment in which an extract made after the method of Blotner and Murphy was tried. He was unfortunately unable to confirm the claims made by the American workers, and showed conclusively that the extract employed by him had no effect upon a very carefully standardised diabetic patient. In our present issue will be found a paper by Dr. P. C. Brett and co-workers in which the problem is tackled from the laboratory point of view. Working in the laboratory of a commercial firm manufacturing insulin, they had at their disposal a large number of rabbits whose response to the international standard of insulin was well known. Using this colony of rabbits they proved that a substance made by the method of Blotner and Murphy was completely inactive. These carefully controlled animal experiments, taken in conjunction with the clinical experiment of Lawrence, seem to contradict the earlier publication of the American workers, and unless some discrepancy in the method of preparation can be discovered it appears that yet another claim to have found an oral substitute for insulin must be abandoned.

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[1] See THE LANCET, 1930, i., 1139; 1930, ii., 707.

[2] See THE LANCET, 1930, ii., 31.

[3] Ibid., p. 1179.

THE TRAFFIC IN DANGEROUS DRUGS.

FURTHER attempts to give effect to the limitation of the production of narcotic drugs to the amounts required for legitimate medical purposes, to which allusion was made in THE LANCET of July 26th last, have been made under the auspices of the League of Nations. In September the Assembly unanimously resolved that plans should be prepared for effecting this desirable limitation, and in pursuance of this object the Council proceeded to convene two conferences. One of them, consisting of representatives of producing countries, was held in London on Oct. 27th to Nov. 11th, and its report has just been made public. The other conference, at which both consuming and producing countries will be represented, is to be held in Geneva next May. Nine countries sent representatives to the London conference, including three—Soviet Russia, the United States, and Turkey—which are not members of the League of Nations. Attempts were made at the conference to arrive at agreed quotas which the producing countries should be permitted to manufacture and export; but while success did not attend its efforts in respect of morphine and heroin a provisional agreement was reached in regard to the production of cocaine. A comparison of the quotas suggested by the manufacturers showed no apparent relation to the figures furnished to the secretariat of the League of the actual national exports of the drugs in question during recent years. Further consideration and negotiations are to be proceeded with before the Opium Advisory Committee of the League meets this month in the hope that a draft Convention dealing with the method and control of limitation of output may be laid before the full Conference in May next. It appears that the draft plan, which was the outcome of the London conference, was accompanied by reservations to its proposals on the part of Japan, Soviet Russia, and Turkey. Perhaps the most arresting features in connexion with the London conference were the participation of representatives of Turkey in the deliberations and the disclosures they vouchsafed in regard to the export trade of that country in narcotics. Turkey, as is well known, is one of the largest opium-producing countries in the world, and moreover it has hitherto refrained from signing either The Hague Opium Convention of 1912 or that of Geneva in 1925. It has been a startling revelation to find that there are now in Constantinople three drug factories, the largest of which has been set up by persons whose licences were confiscated by the French Government as the outcome of illicit traffic. From these factories it appears that more than 4000 kg. of morphine and more than 8000 kg. of heroin are being annually exported. As none of the countries to which it was stated consignments had been despatched had reported their receipt to the Central Opium Board it can be reasonably concluded that much of the seizures of contraband which have been reported from China, New York, Marseilles, Rotterdam, and Hamburg may have emanated from these enterprising drug factories in Constantinople. There will be ample material for consideration by the Council and Assembly of the League of Nations, as well as its Advisory Committee and Permanent Central Board, if the limitation of production of opium and its derivatives and cocaine to medical and legitimate purposes is to be achieved in accordance with The Hague Convention of 18 years ago and the more recent engagements entered into at Geneva in 1925

THE CONWAY LETTERS.

Dr. Archibald Malloch wrought better than he knew when he published in 1917 a short account of "Finch and Baines: a Seventeenth Century Friendship." It has incited Miss Nicolson to collect and annotate the Conway letters which are now published [1] at the expense of the Kingsley Trust Association Publication Fund, established by the Scroll and Key Society of Yale College. Miss Nicolson has performed her editorial task admirably, and shows how wide is her knowledge of the period and of the chief factors in it. She has prefixed to each chapter a general introduction, whilst the letters themselves are carefully annotated with sufficient illustration to help the general reader without detracting from the continuity of the story. The volume contains 281 letters and is nearly exhaustive, but when she is preparing the second edition, which will undoubtedly be called for, she should take the opportunity of consulting the Rev. John Ward's Diary, which was sold at Sotheby's in 1928, and is at present in the United States. John Ward was vicar of Stratford-on-Avon when Anne Conway was at Ragley. He has much to say about events there, and was not backward in expressing his opinion of Dr. Henry Stubbes, physician and author and friend of Hobbes.

Anne Conway, by and to whom most of the letters were written, was a remarkable woman, learned beyond her time. She was loving and beloved by all with whom she was brought into contact; to her devoted brother and affectionate husband she was "my dearest dear." Yet she suffered so severely from a constant headache—perhaps due to a chronic sinus infection, for it was certainly no ordinary form of migraine—that a great part of her life was spent in darkness and seclusion at Ragley, near Alcester, in Warwickshire. Born Anne Finch on Dec. 14th, 1631—a date for which Prof. Nicolson must be thanked—she married in 1651 Edward Conway, son of the second Viscount Conway and Killtulagh, county Antrim, where the Marquisate of Hertford still holds estates, and in due course became Viscountess Conway. Yet it is not as a titled lady of the Restoration period that we think of her, but as the humble-minded friend of Henry More, the scholar, mystic and Christian Platonist of Christ's College, Cambridge; as the patient invalid who was unsuccessfully treated by Valentine Greatrakes, the altruistic "Stroaker"; and as the pupil of Francis Van Helmont and Johann *Gottfried* von Leibniz, who led her from the speculative fields of mysticism to the more healthy atmosphere of the Society of Friends, commonly called Quakers. The letters contain much that is interesting to members of the medical profession. Her eldest brother, Heneage Finch, married Elizabeth, daughter of Daniel Harvey, and she was thus related to Dr. William Harvey by whom she was treated. Her father-in-law, Lord Conway, writes of him in faint praise on July 1st, 1651:—

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[1] Conway Letters. The Correspondence of Anne, Viscountess Conway, Henry More, and their *Friends, 1642–1684*. Collected from Manuscript Sources and Edited with a Biographical Account by Marjorie Hope Nicolson, Professor of English in Smith College, New Haven. Yale University Press. London: Humphrey Milford, Oxford University Press. 1930. Pp. 517, with 16 illustrations. 24s. net.

> "To have a physician abound in phantasie is a very perilous thing. If I had not a great desire to keep you I would not write anything against Doctor Harvey which might in any kind deem to prejudice him, for I do greatly esteem and value him, but I think this is truth as it is that I believe that my son would not know where to find such a wife nor I such a daughter, therefore I pray preserve yourself for your own sake, and then, if there be any place left, for your most affectionate father."

Perhaps Lord Conway was right, for all other measures having failed Harvey was suggesting that she should go to Paris to be trephined—then a formidable and often fatal operation.

Not the least interesting of the letters is that written by John Finch to his sister. It is dated Paris, Dec. 1/11, 1651, and he says, amongst other things:—

> "The Hotel Dieu, God's house, next to the Church of Nostre Dame is, I believe, the best hospital in the world either in respect of the numbers of the sick persons which is above 2000 or their accommodation, which is as good as any sick person requires, save that the multitude of the diseased makes them forced to lay six or eight in one bed, which hinders certainly the recovery of many and infects others fully, that had but a little beginning of a disease in them. 'Tis to me a strange thing to see how many persons of quality come thither, their charitable dispositions making them dispense with that offensive smell which cannot but be very great where so many persons diseased infect the air. There are, besides them that daily come, some religious women who, abandoning all the world, give themselves wholly to attend the diseased in the most servile offices you can imagine. There is scarce ever a night in the year but some die out of this place. I went into the Kitchen belonging to this hospital and I see at least twelve or 14 spits of meat, of fowl and other provision roasting, which lasts from morning to night, as soon as any spit is roasted, a new one supplying its place. But besides for broth I think was meat enough in three cauldrons to supply an army which yielded a perpetual quantity of broth."

All the letters are worth reading, though a few, like those describing the Fire of London, have already been printed. The first is dated May 13th, 1640, and the last sad one of Feb. 18th, 1678/9 gives an account of Lady Conway's death and Van Helmont's device of preserving her body in alcohol until the arrival of her husband from Ireland. She is buried in the quiet little church at Arrow.

THE HEALTH OF THE SCHOOL-CHILD.

THE annual report of the Chief Medical Officer of the Board of Education summarises the work among school-children in 1929.[1] Under statutory obligation nearly two million children were inspected—a decrease of 80,000 on 1928—and in addition pre- and post-school children are being examined in steadily increasing numbers. The percentage of children found to be suffering from defect remains around 20, the decimal figure being higher this year than for the preceding three years. Prolonged—some say unprecedented—industrial depression has led to a special inquiry into the incidence of malnutrition; this has revealed an increase in "borderline" cases, but no very great increase in the definitely ill-nourished. This is a tribute to the services of the organisations attempting to relieve distress in mining and other districts, but the position is still an anxious one, and the efforts must not be relaxed. Apart from special industrial districts, the children of the country seem on the whole to be improving in health and hygiene. Nevertheless a large amount of preventable illness and suffering still exists, and the report contains a special section on the teaching of hygiene. Returns have been obtained from a number of schools, arbitrarily selected, and a total of 3033 reports has been received on the subject. The replies show that health teaching is very unevenly given, some schools paying much attention to it and others ignoring it completely, while yet others are handicapped by having buildings which are sad examples of what healthy schools should not be. Sir George Newman urges local authorities, school medical officers, and teachers to give this subject their attention, for the teaching of hygiene is essentially a matter for conference and coöperation. Three things, he thinks, are needed. First, the recognition that health education is something wider than elementary physiology and should embrace the life of the citizen at home and at work; secondly, the acceptance of health education as a fundamental and integral part of the curriculum; and, thirdly, the working-out of courses adapted to the curriculum, type, and circumstances of each school. He is aware of the difficulties, but is aware also that ignorance on health matters spoils a substantial part of the country's educational effort. Many employers provide classes in hygiene for their new workers, as there has been no adequate teaching at the schools. The Board of Education in 1928 issued a "Handbook of Suggestions on Health Education," wherein principles and methods are set out. This book is not, however, receiving the use it deserves. The teachers have been instructed, a scheme has been drawn up; what appears to be lacking is the insistence by the local authority that the subject shall find a place in every school curriculum.

Schemes for treatment have now been in hand for about 20 years and are continuing to develop. Orthopædic and rheumatism centres and provision of ultra-violet light are among the recent additions, and the older clinics, for minor ailments, defective vision, teeth and tonsils, are improving steadily with experience. The chief difficulty is encountered in scattered rural areas, where all the medical agencies, public, private, and voluntary, must be linked up with the school medical service and the one clinic become the real health centre of the community. The principal figures for the year are as follows: eye and vision defects, 261,295; skin disease, 205,885; tonsils and adenoids, 177,807; ear defects, 46,087; deformities, 26,849; nervous diseases, 11,396; and heart disease, 5973. During the year 88,524 children under 15 died, 26 per cent. from respiratory disease, 24 per cent. from congenital conditions, 18 per cent. from infectious disease, 9 per cent. from diarrhœa and digestive conditions, and 5 per cent. from tuberculosis. There is therefore still a serious, though a much reduced, loss of child life. During school age the chief enemies are heart disease, pneumonia, diseases of the nervous and digestive systems, and accidents. The inability of the school medical service to prevent much of this disease is the measure of its failure. There does not seem to be a great change in the volume or character of illness among school-children during the last few years. This may be ascribed to several causes; first of all, many children who now swell the statistics would have been completely neglected a generation ago. Moreover, the average severity of illness is much less than it used to be, especially in such conditions as uncleanliness, skin disease, discharging ears, and enlarged tonsils. The X ray treatment of ringworm of the scalp is being more and more adopted, with excellent results, and is proving economical in the end. Gentian violet is proving satisfactory for impetigo. The report once more sets out the indications for tonsillectomy and urges that the operation should be regarded as a major one and provision made for keeping the child overnight.

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[1] London: H.M. Stationery Office. 1930. Pp. 152. 2s.

The school medical officer has become more critical and his investigation more searching. Further, the reduction in infant mortality must mean that sicklier children now survive to school age, and if the care which nurtured these through infancy could be extended through the pre-school age there would be huge relief to the school medical service. An enormous amount has been done; there yet remains much to do.

DEEP X RAY THERAPY.

UP to the present time the published results of deep X ray therapy as practised in this country have been disappointingly meagre, wholly incommensurate in fact with the large number of cases treated by this method. There are, perhaps, two principal causes for this: first, a general dissatisfaction with the proportion of successes and a consequent unwillingness to publish until alterations in technique have been tried out; secondly, the conditions under which the work is usually carried on, which render difficult the keeping of records of a type which can be readily reduced to statistical form. It must be remembered that deep X ray workers contend with several disadvantages. The cases referred to them are usually advanced, often hopeless. Bed accommodation is so limited that nearly all cases are treated as out-patients. Pathological examinations of the growth can rarely be made. In short, research conditions usually do not obtain. We therefore welcome Dr. W. M. Levitt's admirable report of an investigation carried out over a period of six years under the direction of the St. Bartholomew's Hospital Cancer Research Committee. The results of the investigation are summarised in a review on p. 25. The report would in any case be welcome as a record of facts, but it is more than this. It is a very able and critical analysis of work carried out under research conditions by an authoritative committee and contains conclusions and suggestions of outstanding value. Sir Thomas Horder, as chairman of the Research Committee, states, in an introductory letter, that the report brings our knowledge upon the subject of the deep X ray therapy of cancer to a state of precision not hitherto attained in this country, and may well prove to be of great value as a standard in the matter for some little time to come. We can endorse this view, and we hope that the appearance of a work of this kind will stimulate other centres to publish their methods and the results hitherto attained. For such publications Dr. Levitt's report might serve as a model.

ASPIRIN POISONING.

IN Hungary aspirin poisoning seems to be the present fashion for suicides. The numbers of people treated for this condition at first-aid stations in Budapest during the three years 1927–29 were 230, 206, and 154, and Dr. J. Balazs, who gives these figures,[1] says that 752 such cases have been treated at his hospital there since 1923. Only four of these have died—a mortality of about ½ per cent.—although the average dose taken has been 300–450 grains. Aspirin being relatively insoluble, some of it usually remains in the drinking vessel, in the mouth, or in the gullet; furthermore, large quantities induce severe vomiting, which also diminishes the amount absorbed. In Balazs's series the minimal lethal dose seemed to be between 450 and 600 grains. Severe cases show the clinical features of an intense acidosis with Cheyne-Stokes respiration, small rapid pulse, and cold sweat; there is great prostration with thirst, vertigo, vomiting, and deafness. In fatal cases death occurs from heart failure, but in others the drug is eliminated fairly quickly and the patient recovers in a few days. The urine may contain albumin, large amounts of acetone, and sometimes red blood cells and casts. Characteristic post-mortem appearances are usually absent, though hæmorrhages in the viscera are described by some writers. In treatment, stomach wash-outs are important, and acidosis should be combated as far as possible. Intravenous injection of 4 per cent. sodium bicarbonate solution gave the best results in Balazs's cases, while insulin and glucose did not appear to be beneficial—which is hardly to be wondered at when the different ætiology of the acidosis of diabetes is remembered. Large quantities of fluids, either rectally or by mouth, are given to lessen dehydration and mitigate thirst. Only in the severest cases are cardiac stimulants required.

INTRACARDIAC THERAPY.

Dr. Albert Hyman has written a brief and useful paper on the present position of intracardiac therapy as a means of resuscitating patients whose hearts have ceased to beat.[1] He points out that the injection of drugs into the substance of the ventricular muscle is more likely to be effective than injection into the cavity of the heart, while injection into the pericardium is usually of no avail. The drug most commonly injected is epinephrine, but successful results have been reported from the use of ether, caffeine, camphor, digitalis, hypertonic salt solution, and many other substances. The diversity of these substances suggests that stimulation of the heart probably depends on the local irritant action of the injected drug rather than on any specific chemical properties. This hypothesis has been carried farther by some workers who have shown that the mere mechanical stimulation of the needle puncture may suffice to restart a heart which has stopped beating. The first beats of a resuscitated heart are extrasystoles, but in successful cases the normal sinus rhythm sooner or later supervenes. Several cases have been reported in which an initial success has been followed by sudden collapse with failure of the circulation. The development of ventricular fibrillation is the probable explanation of this calamity, and the known liability of the ventricle to fibrillate as the result of electrical stimulation under experimental conditions tends to corroborate this view. In order to overcome this difficulty it has been suggested that the injection should be made into the auricle rather than the ventricle. This is not difficult when a long curved needle is used, the site of puncture being the third intercostal space close to the right border of the sternum. Dr. Hyman says that successful results have been obtained in nine cases by this new technique, which he considers to be both safer and more certain than ventricular puncture.

It is clearly unreasonable to expect to resuscitate a patient whose death is attributable to acute or chronic heart disease. The various methods of resuscitation are applicable only in cases where the heart itself is apparently healthy, and stops under anæsthesia or as the result of surgical shock or collapse.

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[1] Med. Klin., 1930, xxvi., 1664.

[1] Arch. Int Med., 1930, xlvi., 553.

DIPHTHERIA TOXIN IN ERROR.

ANOTHER serious loss of life due to human error is reported from Medellin in the Republic of Colombia, South America. An account of the circumstances is given in the local press by the medical man who made the material. He had offered "anatoxine" (i.e., formalinised toxin or toxoid) free of charge to the local welfare centre. The first dose of 0·5 c.cm., and the second of 1·0 c.cm. a fortnight later, were given without incident to 50 children. The third dose of 1·5 c.cm. was to be given in November and a fresh bottle of the material was supplied by the maker. Apparently within 48 hours of the injection several of the children became gravely ill with acute vomiting. The doctor recounts that, on hearing this, he looked into his ice-chest and discovered that his bottles of toxin and of "anatoxine" had become interchanged in position, and that the bottle he had sent to the welfare clinic was not "anatoxine" but toxin. The newspaper stated that 15 children under the age of 5 had already died. No full clinical account, autopsy record, or report of the condition of the remaining children who had been inoculated was given. It will be recalled that in 1927 12 Russian children[1] were killed owing to the giving of toxin instead of prophylactic, and the disaster in Baden (Austria) was attributed by Grassberger[2] to a similar mistake. We had hoped that thereafter such elementary precautions as keeping toxin in a building separate from that in which the material for clinical use was handled—or at least in laboratories geographically separate—and an accountancy system whereby all toxin made was strictly controlled, would be everywhere observed. The loss of life in Medellin appears to be due to a human mistake, which was easily possible under the lamentable system of storing together toxin and prophylactic.

ALUMINIUM IN COOKERY.

ON another page our Berlin correspondent mentions a new inquiry into the supposed dangers of cooking food in aluminium pots and pans, and reports that it proved entirely reassuring. Some 17 years ago we ourselves made experiments[3] showing that "aluminium, as it is now made by reputable manufacturers, is a suitable material for cooking vessels," and again quite lately[4] we published analytical information leading to the conclusion that "even if small quantities are conveyed to the water or food, these are without influence on the health of the individual." If the bogy still shows signs of restlessness he may be referred to the more recent studies of C. Massatsch[5] and of K. Mackenzie.[6] Massatsch found that the attack of waters and foods on aluminium was, at ordinary temperatures and at 80° C., of the same order as on other base metals, and he came to the conclusion that this metal was without physiological action. Mackenzie, working at the Rowett Institute, Aberdeen, added up to 1 per cent. of aluminium in the form of aluminium sodium sulphate to the diet of freshly weaned pigs, and records that they seemed none the worse. There was a definite increase in the aluminium content of the liver and small intestine, and in one animal of the heart, but not in any case as much as 1 mg. per 100 g. of fresh material. Mackenzie concludes that the intake and excretion of aluminium in the pig are equal, within the limits of experimental error; that aluminium excretion is confined to the alimentary tract; that the absorption of aluminium from normal diets containing moderate amounts of available aluminium, as determined by the analysis of the organs, is small; that diversion of phosphates from the urine to the fæces does not occur on such diets; and that no harmful effect on general growth and metabolism results from administering comparatively large amounts of aluminium.

ALFRED MOND.

THE death of Lord Melchett at the age of 62 has withdrawn prematurely from public life one whose qualities and performances had won for him general esteem. In the world of commercial chemistry his influence was paramount, and it was his practical experience as a man of business which made him take masterly hold of the duties of Minister of Health. During his comparatively short period of office the fact, which he confirmed by his actions, that he belonged to no party, though necessarily associated nominally with the administration to which he owed his cabinet rank, was a mark in his favour with those who have to maintain the health of the country. Medical men, especially those whose official duty it is to administer the working of public health enactments, realise alike the virtues of conservatism and the necessity of change, sometimes of radical change, in response to the ever-varying factors in the incidence of disease. Every doctor is a socialist in the sense that he desires the members of society to have equal chances of health, but he must receive the doctrines of socialism with caution when he observes that the most obvious opportunity for each member of a community to receive an equal chance is when an epidemic falls upon that community. Lord Melchett worked valiantly for the common weal in many directions. His achievements in the rational developments of industry were reflected in his work at Whitehall, which is now bearing fruit; he was a generous giver in many judicious directions; and he was an open-handed supporter of the cause of his own people.

AVERTIN AND NITROUS OXIDE.

COMBINATIONS of anæsthetics are at the present time "in the melting-pot." Almost every week brings some new and warmly recommended association of drugs. The chief aim now appears to be to discover some means whereby nitrous oxide can be rendered effective for major surgery without the aid of ether or chloroform. For this purpose H. Flörcken[1] has been using avertin, and is well satisfied with his results. The operations performed under anæsthesia due to rectal avertin followed by gas-and-oxygen inhalation included 80 gall-bladder cases, 52 resections of stomach, prostatectomies, and thyroidectomies for Graves's disease. We understand that some anæsthetists in this country, too, have been using this same combination of drugs with satisfaction. Very often the results have left little room for improvement.

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[1] Bull. Hyg., August, 1927, p. 667.
[2] Arch. für Hyg., 1926, xcvii., 97.
[3] THE LANCET, 1913, i., 54.
[4] Ibid., 1928, ii., 1216.
[5] Chem. Centr., 1929, ii., 1912.
[6] Biochem. Jour., 1930, No. 24, pp. 1433-41.

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[1] Med. Klin., Dec. 12th, 1930, p. 1854.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.

I.—CLEARING THE GROUND.[*]

INTRODUCTORY.

I HAVE not attempted to quote authorities in these lectures for several reasons. The task would be beyond me to do adequately, and would involve a loss of unity and simplicity which I have tried to maintain by presenting an individual point of view, based principally on clinical experience. The advantages and disadvantages of this method are obvious, but I feel that these lectures should be prefaced with some acknowledgement and apology to those authors whose work may have suffered in my attempt to simplify what must always remain a most difficult subject. Although each lecture in itself may seem to do its subject less than justice, I have aimed rather at presenting them to form a whole, provocative of thought and introductory to further study, rather than to define any origin and final system of psychology. I would also like to express my thanks to Dr. Henry Yellowlees, of the Department of Psychological Medicine, St. Thomas's Hospital, and to Dr. Crichton Miller, honorary director of the Tavistock-square Clinic, for permission to refer to cases.

Two Viewpoints.

What do we mean by "nerves"? It is probable that the diagnosis which the doctor most commonly makes, at least in the privacy of his own mind, is that of "nerves." It is a word which is most useful to him, covering, as it does, a large group of cases which it is difficult to classify in any other way. It is also very popular with patients themselves, whatever their social rank may be. There is no doubt that this label has a definite euphemistic value, and this accounts to a great extent for its popularity and usefulness. To tell a patient that he (or she) is suffering from mental disorder would probably cause an increase in his anxiety, if it did not send him to another doctor who would be considerate enough to say that it was "only nerves."

In taking a patient's history it is a common experience, in reply to such a question as "Have you ever had any mental trouble before?" for the patient to say, "No, doctor, but my nerves have been bad." Further questioning in one case brought to light that the patient had actually been under certificate at a mental hospital for six and a half years suffering, in his opinion, from "nerves"! It is not hard to understand the value to the patient and the patient's relatives of the use of this vague term. Rightly or wrongly, mental disorder is associated with disgrace, but there is no disgrace in having suffered from "nerves"; if anything, it is something of which to be a little proud. "She was always a highly strung child" conveys a fond mother's pride in her daughter's peculiarity.

Of late years another term has crept in, possessing the same useful purpose, but expressed in a rather more dignified manner. There is a tendency amongst doctors to feel that when they have described a patient as suffering from "neurasthenia" they have added to their scientific comprehension of the patient's disorder. "Neurasthenia" is applied in the same vague and general way, and with the same aim in view, of satisfying both doctor and patient without damaging the prestige of either. But neurasthenia has a definite and limited meaning, and if used accordingly it should only be applied to something under 1 per cent. of those innumerable patients suffering from "nerves" who consult the general practitioner. Neurasthenia refers to a condition of heightened fatiguability, and is a comparatively rare disorder, in spite of the frequency with which the term is used. Doctors wishing to distinguish between the real disorder to which the term applies and the general condition for which the term is used, but to which it does not apply, sometimes speak of "true neurasthenia." It is not unusual, however, to find that true neurasthenia means no more than neurasthenia, as a general group label for all mental disorder, and that a patient sent up for a consultation with the suggested diagnosis of "true neurasthenia" may have, in fact, any other kind of mental disorder, such as dementia præcox or manic-depressive insanity.

THE NEUROPHYSICAL POINT OF VIEW.

Both in the out-patient department of a general hospital and in general practice it is the custom to classify patients into "organic" and "functional," and it is the tendency to dismiss the latter as of comparative unimportance, although the probability is that they represent a large proportion of the cases applying for treatment. From the point of view of social economy it cannot be sufficiently emphasised that so-called "functional" disorder is responsible for an incalculable amount of social inefficiency and domestic infelicity.

Whether the disorder be called "functional nervous disorder," "neurasthenia," or simply "nerves," the tendency is either to ignore it as not being worthy of medical interest or to apply certain time-worn and not always suitable methods of treatment.

In general there would seem to be uncertainty in the doctor's mind as to whether the symptoms are due to some vague moral disorder on the part of the patient or to an equally vague disturbance of the nervous system. The treatment usually falls under one of the following four headings:—

(*a*) The *exhortatory method.*—This is usually the first method applied by relatives, and assumes that the patient is in some way blameworthy for not doing what he should, and only needs talking to in the right way to be cured.

The advice given too often by doctors, as well as relatives, is that the patient only needs to "pull himself together," that "there is nothing the matter with him," and that "it is all only imagination." After this advice has been repeated a few times it tends to become more caustic and more punitive. The relatives are perhaps told that all the patient requires is discipline, to settle down to some really hard work, and to be made to suffer hardship. This method of treatment begins with a plain assumption of benevolent omnipotence. It usually ends with an effective attempt not so much to cure as to dismiss both patient and symptoms by the prescription of a sea voyage or an open-air life, to be spent in digging the land—preferably in a far-off colony of the Empire, where conditions are such as to test the physical and moral adaptability of the strongest constitution.

(*b*) *Medical.*—Up to recent years the drugs available for cases of nerves were mainly either sedatives or tonics. More recently, since endocrinology has come to the fore, a great choice of remedies of this type has been put into the hands of the doctor, and exploited as a rule with an enthusiasm in inverse proportion to their therapeutic reliability. In general, where the cause of a disorder is unknown, two tendencies will be noticed. The first is an assumption that one particular treatment is a panacea, the second is a tendency to apply a multiplicity of remedies. The panacea is an example of wish-fulfilment. It is an over-compensation for a "feeling of inferiority" towards the disorder to cover the fact that we do not like to admit to ourselves that we really do not know much about it. Where there are many alternative remedies there is usually the same underlying uncertainty, and the degree of enthusiasm with which they are applied is not to be taken as a true measure of their therapeutic activity. The value of medical remedies in disorders of the nervous-emotional system must always be extremely doubtful, owing to the difficulty of determining to what extent they have been actually causative in any ameliorative changes which the disorder may undergo.

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[*] A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Lecture II. will appear next week.

It must always be borne in mind that one of the great values of medicine is as a vehicle of suggestion. To what extent the action of a medicine is due to suggestion, and to what extent it is due to pharmacology, must always be open to doubt. There are many patients of the same type as the one who said, "My blood is such a pale colour, doctor. Will you give me some of that red medicine to make it stronger?" She was given the red medicine, which incidentally contained iron and arsenic, but in all probability its beneficial effect, if any, was due to her faith in the colour of it, rather than to its pharmacological properties.

(c) *Rest and diet.*—The most extreme example of this method, used as a panacea, was originated by Dr. Weir Mitchell in America. When faithfully carried out it consists of 8 to 12 weeks' absolute confinement to bed and seclusion from relatives. The patient is forbidden to make any movement of his own accord, and if he wishes to turn over in bed it must be done for him by the nurse. At the same time that his exercise is reduced to a minimum, his intake of nourishment is increased to a maximum. It might reasonably be anticipated that the balance of energy in the nervous "bank" would, by this method, be rapidly increased. Its value, however, is limited owing to the patient's inability to do nothing without worrying, and in practice it is necessarily modified. It is another example of a method which has a limited usefulness in certain cases, but by being carried to extremes as a panacea it is liable to be used in many cases where it is not suitable.

(d) *Final or dismissive.*—The last shot in the locker of a physician who knows only the "neurophysical" method of approach to his patient's disorder is the too often repeated prescription of a sea voyage. It would be interesting, if it were possible, to obtain statistics to indicate successes and failures of this method; the number who have never returned and the number who have returned no better than when they departed. Whatever may be its advantages to the patient, it is easy to appreciate its usefulness to both doctor and relatives. The patient, whether he suffers from "nerves" or "neurasthenia," can be a great trial to doctor and relatives alike, and the prescription of a sea voyage is at least beneficial to those who are temporarily set free from the responsibility of his care. It is no doubt occasionally beneficial to patients whose environment has become too difficult for them, and provides a change in the early stages of paranoia which may delay the progress of the disease. In the majority of cases, however, it is both unnecessary and unsuitable, besides being usually economically impossible.

"OMNIPOTENT" METHODS: SUGGESTION AND PERSUASION.

Of recent years other lines of more definitely psychological treatment, usually in the hands of specialists, have come to the fore. These aim at a cure of the patient's disorders by methods either of repeated persuasion or hypnosis. Although these methods show an advance in many cases on those already mentioned, they share with them the disadvantage of being unscientific. Like all unscientific methods, they tend to be invested with an atmosphere of omnipotence or God-like magic, which attempts to exorcise the patient's disability without having first discovered the cause of it.

The Development of Psychopathology.

The greatest advance in general medicine has always come through ætiological research, the cause of the disorder being thoroughly investigated and understood before treatment is prescribed. Such an advance as the use of antitoxin in diphtheria was due to the discovery of the causative bacillus and its activities in the tissues. Previously treatment had only been on symptomatic lines, aiming at relieving such general conditions as temperature and the local affection of the throat. When the cause of the disorder was discovered, it became possible to treat the cause, and the importance of the symptoms became secondary. The ætiological and pathological approach towards patients, their symptoms and their problems, is the bed rock of medicine as a science and the test of its progress. It is only of recent years, since the investigations of psychological material by Dr. Sigmund Freud, of Vienna, and his followers all over the world, that psychology has fallen into line with general medicine and deserved the prestige of any scientific status.

The fact that psychology has at last developed a more scientific method of approach to the problem of mental disorders does not, however, necessarily mean that it should be included amongst the sciences. It is probable that there will always be more in psychology than can strictly be described as "science," but the same may be said of medicine itself.

ANALYTICAL PSYCHOLOGY.

Analytical psychology is the term used to describe this method of tracing back from the symptom to the cause. Whether carried out according to the specific technique of Dr. Freud or according to the modified methods of Dr. Jung or Dr. Adler or their followers, it aims at establishing a psychopathology which may enable us to understand disorders in psychological medicine in the same way that a knowledge of pathology is the basis of our work in general medicine. When we understand the psychology and pathology of the conditions that we are asked to treat, we are in a position to apply a general scientific technique, and not before. It is true that there are many schools of psychology which, although they hold much in common, differ at many points. Psychology as a science is still in its infancy, and the scope it offers for research is as deep as human nature itself. Differences must therefore be welcomed and doubts tolerated, for it must be many years before any degree of finality can be attained. It is sufficient to mark a new era that our understanding of, and control over, mental disorder is at last, and for the first time, being built upon a scientific foundation.

Psychopathology and psychotherapy being both as yet so young, it is unfortunate that any school of psychological research should be abusive of the methods adopted and recommended by those who have adopted another point of view. Only a wide vision, with much mutual toleration and willing team-work, will solve the problems involved in the subtle interactions of mind and body, heredity and environment. But at present the neurologists can see little that is good in the methods adopted by the analysts, and even the latter are liable to be as intolerant of divergencies of opinion amongst themselves. This tendency to be exclusive and intolerant of different opinions is inimical to progress, but it is characteristic of human nature and as such it requires to be understood, rather than regretted or ignored. The cause of it will probably become more clear in the course of the pages that follow. Every progressive movement in history has had to be born and developed against opposition and, if on the right lines, it has thrived by the experience it has gained in the struggle. It is true that some of the criticism which has been levelled against modern psychology is justified, and should, therefore, be welcomed as necessary for its development as a progressive science. But at least modern psychology demands and deserves critical and sympathetic consideration. It would be equally unwise to accept or reject it wholesale, if indeed any unified conception of it could be discovered at the present time. The tendency with a single gesture to divide the world into sheep and goats, right and left, right and wrong, is a common error latent in the immaturity of human nature. We praise wholeheartedly and blame with equal abundance, until we learn to discriminate more subtly in our criticisms. To condemn all or praise all is a sign of unbalanced immaturity. Modern psychology may have made some mistakes; but it contains a nucleus of truth which is of unparalleled importance for the human race, and it can no longer be ignored.

Cases Suitably Treated by "Neurophysical" Methods.

The treatment which any case will receive is liable to depend on whether it be treated by a neurologist or a psychologist. Each is prone to treat the same case exclusively according to his own methods. From the point of view of the doctor it is of great importance to recognise those cases which are suitable for treatment by the simpler methods of encouragement, rest, and appropriate medicine. There are many cases which do not require the psychological approach because their psychopathology is not of primary importance. It would be a very grave error, however, to believe that the psychological side is unimportant in any of the following types. In any one the psychological factor *may be* of primary importance, but the headings are suggested as including a great many cases with which the general practitioner can deal unaided. The classification of those disorders which can arise without the need for investigating the psychopathology may be stated as follows: (*a*) fatigue states, (*b*) toxæmias, (*c*) endocrine disorders, (*d*) disorders due to shock, (*e*) disorders due to environment.

FATIGUE STATES.

Under the strain of economic conditions and the innumerable stresses of everyday life it is inevitable that fatigue should play a large part in the development of common mental disorders. It is only necessary to consider the way in which symptoms of disorder develop in a tired child. The outbursts of temper, instability of character, and signs of physical fatigue are the inevitable consequences of a nervous system which has been asked to perform more than it was able to fulfil. Treatment for the tired child comes normally at the end of the day with rest and sleep, and the next day finds the child ready to resume its normal life refreshed and re-established in its adjustment towards its environment. Only after the process of undue exhaustion is repeated and prolonged is the child's capacity for recuperation likely to be insufficient. If we are wise, we do not treat the tired child with a long exhortation on the psychological causes and social effects of its disorders. We simply put the child to bed, and time and nature do the rest. This is the simplest form of what is meant by neurophysical treatment.

It is a common fallacy to tell a child that he or she is being naughty, for the same reason that the doctor or relative is inclined to tell the patient that he or she is being naughty or lazy or stupid. There is no small measure of satisfaction to be found for any one of us in criticising one another. It adds to our sense of power and well-being, but the fact remains that the child is not naughty, but tired, and that rest will do more to put things right than blame.

The case of Mrs. A. may be taken as typical of many others of similar causation which occur in general practice. She was seen as an out-patient in the department of psychological medicine at St. Thomas's Hospital.

CASE A.—Female, married, aged 30, five children (eldest 9, youngest 15 months).

Complained of very severe stammering, occasionally complete loss of voice, headaches, choking feeling in the throat, nervousness, extreme irritability with the children.

Physical signs.—Thyroid prominent, slight exophthalmos, reflexes exaggerated, pulse 100, tremor of the hands, teeth bad.

History.—Nothing outstanding of importance in childhood. She was said to have been anæmic at puberty, and to have been always of an excitable disposition. She was married at 20. During her married life her husband had been frequently out of work, and had never earned more than £3 a week. Living accommodation had never been more than two or three rooms, and the children had had many illnesses. She stated that she had never been free from worry about the children. There had always been financial stringency and she had never, during her married life, been away for a holiday. During the last four weeks the baby had been suffering from bronchitis. The doctor had advised the use of a bronchitis kettle, which had been devised by inserting a piece of lead piping into a broken kettle. The water had boiled away, and the weight of the lead piping had caused the kettle to upset over the baby, burning it severely, and it had been taken to hospital a week before. It had been very dangerously ill, and the mother had been going to and fro several times a day to the hospital. The shock of this accident had brought on the stammering.

Diagnosis.—Exhaustion and shock. Psychopathology is relatively unimportant. Anxiety state in a hysterical subject.

Treatment.—The patient was first sent away for a fortnight's convalescence at the seaside. She came back much improved. Her stammering had disappeared, but recurred with the renewal of responsibility and anxiety for the children. It disappeared again when she settled down at home. Her teeth were in a very bad condition, and a dental X ray showed much pyorrhœa and some formation of apical abscesses. She was referred to the dentist, who extracted 16 at a single sitting, the remainder a week later. As a result she had a period of insomnia and complained of severe pains in the head, and a general increase in her symptoms. Four months later, having been seen at intervals of a few weeks, the patient reported practically well. Her pulse was 70. There was no exophthalmos or thyroid prominence, no stammering or headaches, and she was very cheerful. She had to continue to live in very undesirable and inconvenient quarters, which materially delayed her complete recovery.

TOXÆMIAS.

The subject of fatigue states was introduced by a consideration of the consequences of fatigue in children, and it is helpful to begin our study of toxæmias from the same point of view. Very little experience of children is sufficient to prove the importance to the child of a daily motion of the bowels. If two or three days have gone by without elimination of the waste products of digestion, the child will become lazy, ill-tempered, and apparently out-of-sorts. A dose of some mild purgative will do more to re-establish the child's equilibrium than any measure of exhortation.

It is a common experience to contribute our own disordered emotional states to a "cholæmia" which we do not hesitate to treat with a mild dose of calomel, expecting to view the problems of our lives from a more optimistic angle on the following day. What we do not realise, however, is that many of our patients are constantly in this condition and, not having the knowledge to apply such a simple remedy, the disordered state of their alimentary function has been allowed to go beyond such easy repair. It would seem, therefore, to be inevitable that toxæmia from the bowels should be a frequent cause of disordered metabolic function in a large number of patients.

Toxæmia is a potent depressor of metabolism and most commonly occurs from one or other of the following sources: (*a*) bowels, (*b*) teeth, (*c*) tonsils, (*d*) sinuses.

The following case (another hospital out-patient) appeared to be one in which a chronic frontal sinus infection was mainly responsible for the patient's condition.

CASE B.—Male, married, two children. Aged 49.

Complained of depression, lack of concentration, complete inability to do any work. Frontal headache, worse in mornings and present on waking.

Signs.—The patient was obviously depressed, but there was no delay or dullness in his answers to questions, and he did not appear to be emotionally retarded.

History.—He was brought to hospital because he had disappeared one evening after having been very depressed, and had been found by friends meditating suicide on a canal bank. He had had certain business anxieties, but not sufficient in themselves to be overwhelming. He had not had any previous attack of depression. He was happily married, but had always taken life seriously and was of a reserved, quiet disposition.

Treatment.—Inquiry elicited the history of attacks of nasal catarrh and postnasal discharge. He was referred to the nose and throat department, who diagnosed chronic frontal sinusitis. This was treated; and a month later he was able to resume work, having discussed the whole matter of his depression very sensibly.

At every point the general practitioner is faced with the temptation to apply a single remedy as a panacea. A word of warning is particularly applicable on the subject of toxæmia.

There is no doubt that certain cases do benefit by extraction of teeth. There is equally no doubt, however, that it is a great deal easier to extract teeth than it is to put them back again, and that no artificial tooth is quite as good as a real one. The best safeguard is a competent dental X ray, confirmed by the dentist's clinical examination, and a conservative attitude on the part of the physician. The effects of toxæmia may be very varied. In general, we may expect to find symptoms of metabolic depression, with a tendency to stasis and low blood pressure, but the emotional symptoms which may occur depend upon the emotional constitution of the patient. In brief, the chain of the patient's psychophysical constitution will be liable to break at its weakest link, and the symptoms, whether physical or emotional, will be those to which the patient has in the past been most liable to succumb.

ENDOCRINE DISORDERS.

Endocrinology is still in its infancy, but the disorders which most commonly come under the notice of the general practitioner are those associated with under- or over-activity of the thyroid gland. We are faced with the question as to which may be primary—the endocrine disorder or the emotional. In the case of Mrs. A., already mentioned, her anxiety was associated with some enlargement of the thyroid and a rapid pulse, three of the four cardinal symptoms of exophthalmic goitre. When the anxiety and exhaustion were removed, the function of the thyroid became normal again and may be assumed, therefore, to have been secondary to her emotional condition.

Some cases of anxiety, with symptoms of an over-active thyroid, are found to respond satisfactorily to administration of iodine—e.g., ♏1 of the French tincture t.d.s. in milk. In others, it may be necessary to discover and remove the source of anxiety, frequently a sexual factor.

Another type of thyroid dysfunction is that which occurs when the thyroid is under-active, of which the following is an illustrative case.

CASE C.—Female, married, aged 40, one child aged 12.

Complained of depression, tiredness, head pains, swimming feelings. "I don't mind if I live or die sometimes." Fear of going out and crossing roads. Periods reduced in amount: duration two days. Constipation. On inquiry she stated that she felt the cold dreadfully, and was putting on weight.

Signs.—Skin very dry and thick, pulse 84, temperature 97·8, dull and lethargic.

Treatment.—Began with gr. ½ of thyroid twice a day, increased after a fortnight to three times a day. After four weeks she said: "I feel very much freer in the mind and body. I used to feel so depressed. I have been out a lot more, and do not feel so tired." The thyroid was gradually increased up to a maximum of gr. 2 siccum three times a day, omitted during her periods. This was beyond the limit of her tolerance, and she lost 4 lb. in weight in a fortnight and her pulse was found to be 130. The thyroid was reduced to gr. 1 three times a day, which was maintained without symptoms of intolerance, and she stated that she could not possibly do without it. At the end of another month her periods were normal, pulse normal, skin softer and moister. She stated that she was practically free from all the symptoms of which she had complained three months before. She was bright and cheerful, and said that her friends remarked that she was like a different woman.

DISORDERS DUE TO SHOCK.

Certain severe nervous shocks cause instability and give rise to inadequate or pathological behaviour. Shocks of one kind or another are inevitable in every lifetime, and vary in degree from such an unusual experience as a severe thunderstorm to a child, a motor accident, or the shock of a sudden death. An example of the first occurred to a child of two years old. It was not the first thunderstorm the child had experienced, but it was exceptionally severe. The child had gone to sleep and was awakened suddenly by a very severe clap of thunder, by which she was extremely frightened. Succeeding claps of thunder, although not so severe, produced the same response of fear until the storm was over. She then had recurrent violent attacks of vomiting, which lasted for about an hour, and it was a day or so before her gastric condition became normal. This would seem to be a case in which a nervous shock produced a nervous disability chiefly gastric in its symptoms.

Up to this point it is not possible to say that there had been any psychopathology in the production of the child's symptoms. But what would happen with successive thunderstorms? The emotional response of fear at the sound of thunder had been aroused, and the child had been comforted by the mother. A chain of events had been established: thunder, fear, crying, and mother. It would be only natural in the event of another similar fear stimulus for the child to respond in the same way and flee to the mother again for comfort and protection. From this point the need for the mother has been introduced and, with her, psychopathology. If the thunder becomes a means to gratify the child's wish for its mother, the thunderstorm, although still feared, becomes desired and made use of, as a means of gratifying the wish of the child for the mother. To use Prof. Pavlov's terminology, it has become a "conditioned reflex." If this occurs, a psychopathology has been produced and the response will be exaggerated as a means to produce the desired end—i.e., maternal love and protection.

Accidents are nervous shocks and in themselves are independent of psychopathology. The nervous shock alone will respond to treatment by rest, time, and re-education. If a correct adaptation is made, the injured person should be able to run the risk again without expecting to have a repetition of his previous experience and without exaggerated fear. His experience will probably have instilled added caution, but nothing more. It is common, however, for such an accident to produce symptoms of psychopathology beyond the nervous shock. The integrative nervous-emotional unit is most liable to break down at the weakest link.

CASE D.—Male, married, aged 57. Four children.

Complained of depression, self-criticism, lack of concentration. *Duration six months.*

History.—He had always been of a nervous temperament, over-anxious about himself, and making the most of illnesses, usually more or less imaginary. He had been ambitious and embarked on business adventures until his courage failed, when he would do his best to get out of them as quickly as possible. In private life he found ambition and security in social and committee work, in which he was something of a tyrant. His wife was far more dominant in the family than himself. He met with an accident while being driven in a car, and after it he complained of shock. He was not injured and the accident was only a minor one. He returned to work the following day, but was more anxious, and complained of loss of concentration. He became worse, and after a week, being quite unable to work at all, he retired to bed. He became depressed, and spent his time worrying over trivialities and exaggerating all the failures in his life which he could remember. His integration had been destroyed by the shock of the accident, and he now became a problem in psychopathology.

This case serves to illustrate the way in which the cause of the symptoms may be primarily organic, but may give rise later to more important psychological conditions.

DISORDERS DUE TO ENVIRONMENT.

Environment may be emotional or physical. There are many cases in which disorders will clear up if the patient is removed from home surroundings. For example, where father and son are making the worst of each other. It seems to be almost a biological necessity that sons should look at life from a different angle from their fathers, and that fathers should regard their sons' developing ideas with some measure of disapproval. It too often happens that this more or less inevitable biological friction is carried to such a point as to give rise to symptoms of minor emotional disorders. Removal of the son to a more sympathetic environment may help to re-establish harmony. Sometimes it is the father who is at fault, sometimes the mother, and sometimes both. The problem of environment is always more important where the patient is youthful.

Physical environment is sometimes responsible quite apart from emotional difficulties. A highly strung, intelligent well-educated, and ambitious man of 32 was earning £2 12*s.* a week as a mechanic in a mass production workshop, where he was surrounded for eight hours a day with clanging machinery. He developed insomnia, irritability, nervousness, and depression which cleared up after a month's holiday, and he was advised to try to find a job more suited to his temperament. Similarly, young girls who have to stand for long hours in a close atmosphere are very liable to develop symptoms of emotional disorder.

Cases which Require Psychological Treatment.

INSOMNIA.

The symptom of insomnia is an ever-present responsibility to the general practitioner. Are we here dealing with a neurological problem or a psychological one? If it is only failure of the neural integration we are right in our prescription of sedatives, with perhaps some assurance as to the relative unimportance and curability of the condition. There are cases of insomnia which clear up under such treatment, but there are others which are extremely intractable when treated only from the neurological or organic standpoint. These cases usually present underlying problems in psychopathology which can only be understood and adequately dealt with from the psychological point of view. In such cases insomnia becomes useful to the patient and the symptom is a purposive one, even though it may be quite dissociated from his everyday conscious behaviour.

Two cases may briefly be taken in illustration:—

CASE E.—Female, married, aged 52, no children.

Complained of intractable insomnia.

History.—Her father had been a doctor, to whom as a child she had been extremely devoted. He had been in the habit of stroking her forehead before she went to sleep, and she remembered lying awake in order that her consciousness of this pleasant experience might be prolonged. She married late in life, and her attitude towards her husband was never satisfactory. She said he had never understood her, and she spent a great deal of his money in seeking doctors who might be better able to do so. She had recurring attacks of insomnia associated with anxiety. She went to an hypnotist who treated her by placing his hand on her forehead and speaking to her in a way which reminded her of her father. The treatment was far from being successful, but produced instead an attack of acute anxiety and depression, with increase of insomnia. The cause was discovered under analysis. The insomnia was a means to an end, a way to centre upon herself the doctor's attention, and the doctor was a substitute for her father.

The symptom was purposive, and was therefore not to be cured by ordinary medical methods. The more treatment of that kind that she had the more persistent her symptom became. It may be asked, "Why, if insomnia was the means, and father-doctor the desired end, was the symptom not appeased when she was the centre of the doctor's attention?" The end, although wished for, was an intolerable one, owing to the emotional conflict involved. This will be made more plain in later chapters.

CASE F.—Male, unmarried, a clergyman, aged 35.

Complained of intractable insomnia of ten years' duration. His physical appearance was perfectly healthy, and belied his statement that he never slept.

History.—His father was a very dominant personality, himself a clergyman, who had decided that all his sons were to follow in his footsteps. He had also decided that they were to be a great credit to the profession which he had chosen for them, and do surpassingly well in their preliminary examinations. The patient had had doubts as to any wish on his part to enter the Church, but his father had instilled into him the high calling of the family and his responsibility in the matter as a spiritual leader. The patient had with great difficulty passed his examinations, and found it very difficult to fulfil his father's ambition. He had an inevitable sense of failure, and an intense fear of being unable to do *what was expected of him. The insomnia began after an* operation for tonsillectomy, in which he expected to die under the anæsthetic. His horror of sleep was associated with his horror of anæsthesia, a horror of "letting himself go" or of losing consciousness. His attitude towards life was apprehensive, clutching on to straws that might aid his self-approval. In his parish duties he became subject to attacks of acute anxiety with trembling, sweating, and intense emotional discomfort. He could not sleep, so he could not be expected to do his work while suffering such agonies of insomnia, and it had to be given up.

His insomnia provided an excuse for his failure; it was an unfailing source of self-pity for his martyrdom, it was an escape from his responsibilities and a subtle revenge against his father. No wonder it was intractable!

THE NERVOUS TEMPERAMENT.

A similar problem to that which is presented by insomnia is seen in such cases as enuresis and stammering. Are these to be regarded as belonging, in respect to treatment, to the neurologist or the psychologist? The psychologist will say that enuresis has a definite value to a child in that there is a certain element of *gratification derived from bed-wetting. It is a way of* making a fuss, of calling attention, and of getting into the limelight of mother or nurse. It is an example of a "conditioned reflex" in which bed-wetting has become associated with the desired object, the mother.

In the same way the psychologist will say that stammering has a defensive function. It is a means of setting the patient on one side, of separating him from the world and his problem. It is quite true that both these symptoms have a purposive value, but is not the neurologist right in considering that they are also the sign of primary failure of integration in the synthesis of the nervous-emotional system?

Integration of the nervous system normally occurs with growth and development. For example, it is the integration of the nervous system which enables a baby to walk and later to develop the finer movements of the hands and to speak. Delay or failure in this capacity for nervous integration is a sign of a primary hereditary defect, quite independent of any psychological usefulness which may be derived from it later.

This brings us to a consideration of the nervous temperament, and of the individual who is so often described as being "highly strung." The disabilities of the nervous temperament may be divided into three:—

(*a*) *Failure of integration.*—The nervous system—physical, emotional, and mental—which should work together as a whole, as a single unit in harmony, fails to do so. There is conflict instead of team-work, disunity instead of unity.

(*b*) *Over-sensitiveness to stimulus, especially fear.*—This is the thin-skinned type who feel more acutely and are more subject to disturbances of one kind or another.

(*c*) *Inadequate or indefinite response to stimulus.*—The *nervous temperament* finds *difficulty in responding* adequately or definitely to a stimulus. Either there may be a lack of primary dynamism or an uncertainty as to the course of action which the occasion demands.

It is this combination of a failure of integration, increased excitability and inability to make an adequate response in behaviour, which makes the life of the possessor of the nervous temperament such a problem and gives the type a tendency towards instability.

FALSE ADAPTATION.

Life is therefore more difficult to the possessor of the nervous temperament, and it is often through symptom formation that adjustment is made to the challenge of reality. Symptoms are developed automatically and unconsciously to solve those problems where consciousness has failed. The symptoms are therefore purposive, and only when viewed from that point of view will therapeutic measures be successful.

CASE G.—Female, unmarried, aged 37.

Complained of uncontrollable habit spasm, her head jerking back and her arms jerking upwards in certain circumstances.

History.—For 20 years she had been on the same stool, at the same typewriter, in the same small office, under the same employer, in an ironmonger's shop. Her symptom developed at the typewriter, and she was quite unable to continue with her work. Her head jerked back, her arms jerked upwards, as if something horrified her from which she was trying to get away.

The interpretation of the disorder is one which aptly described her emotional attitude towards her work. Her life had no other outlet, and she longed for change and freedom, but the desire was completely unsatisfied in the drabness of her oft-repeated task. Where her mind had refused to make the necessary change in her condition, her nervous system had come to her aid and gratified her strongest wish to be free, but, as is always the case with such automatic actions, her freedom was dearly purchased at the expense of a symptom.

Summary.

1. There is a right and a wrong way of treating any disorder, whether physical, "nervous," or mental. The wrong way is symptomatically, the right way is ætiologically, trying to discover and remedy the "*cause.*"

2. In problems of mental disorder there are two different directions in which the cause may be sought—it may be *physical*, e.g., due to toxæmia or endocrine disorders, or it may be *emotional*. Both physical and emotional factors may be involved.

3. If a person is ill enough to be told to "pull himself together" he is ill enough to see a doctor, if he be the right kind of doctor. A patient suffering from "nerves" must be regarded in just the same *ætiological* way as a patient suffering from any form of organic disorder, but usually requires a great deal more patience.

4. Where the illness appears to be due to environmental factors, or to such physical conditions as endocrine disturbance or toxæmia, it is necessary first of all to treat such causes as can be found.

5. Where there is no apparent cause, a tactful and careful history of the sex life should be undertaken. Education on common-sense lines and instruction in elementary sexual hygiene—for example, of husband and wife in a case of anxiety over pregnancy or the practice of coitus interruptus—may do much to remove intractable symptoms, both emotional and physical.

6. Where all else fails, the case should be referred to a psychological expert who has more time and knowledge to devote to such cases than the busy practitioner can be expected to possess. It is better to let him find the cause of the trouble if he can, than for the practitioner to adopt heroic surgical methods or advocate dismissive sea voyages.

comes a paper by H. R. Müller and A. Stender,[3] in which an acute paraplegia whose causation entirely escaped detection during life proved to be due to *S. mansoni*, evidently acquired in South America with initial symptoms passing as gonorrhœa. The characteristic eggs formed centres for numerous pseudotubercles studding part of the dorsal region of the spinal cord. It is noteworthy that the Indian writers for the liver, and the German ones for the cord, both use the term pseudotubercles. Had a commercial antigen been available, it is probable, in view of the early symptoms, that a complement-fixation test would have been positive in serum, and it is possible, in view of the condition found after death and the analogy with hydatid infection, that it would have been positive in the cerebro-spinal fluid. The puzzled clinicians would have had a lead to treatment, and the patient might have had some hope of betterment. Watchfulness in such cases is the more needful, since a cerebro-spinal habitat has now been reported for all the three schistosome species which infest man.

The effects of treatment on goats were interesting. The proportion of male to female worms in untreated animals was 2 to 1, in those treated with emetine 4·3 to 1, and with tartar emetic 6·2 to 1. In a treated goat there were found 406 days after infection 25 male worms, no females, and non-viable eggs in the intestinal wall; yet the animal gave a strong positive complement-fixation reaction when tested two days before death. Persisting infection was, then, detected in an animal no longer infective, a refinement of diagnosis nevertheless important for the individual patient. The Bombay workers are, however, disposed to think that a positive reaction may be maintained by absorption of products from disintegrating flukes after all are dead, an important practical point which will be settled only when knowledge is greater.

Aspects of Immunity.

The disappearance of schistosomes under treatment leads naturally to certain aspects of immunity, using the word in a wide sense. Infection with male schistosomes only has been attributed to infection by cercariæ from a single mollusc which has been infected by a single miracidium, the last having its sex already fixed. Another hypothesis suggests that it is with the mollusc that determination of sex lies, holding that at certain seasons some factor renders impossible the survival of female cercariæ. In the Bombay work worms found in guinea-pigs were, with good reason, believed to be exclusively male. This host was then the dominant factor in determining the sex, since the material used was a fair sample of a mixed collection from several snails, material which produced normal sex proportions when used to infect goats. Though, then, the sex may be implicit in the miracidium, the host, intermediate, definitive or both, seems finally to determine whether only the sturdier male shall survive, seems to possess a specific or perhaps individual immunity to the female fluke. There is, too, an organ immunity becoming, as has been noted, stronger as the worms age. This can hardly be due merely to clotting of blood round the flukes—as is suggested from Bombay—for this occurrence is in no way restricted to unusual worm habitats. Rather must it be looked on as a special instance of a general principle. Every animal has a restricted range in the world, and every parasite is equally restricted within its small world—its host. The restriction of free living animals is in no way due to the presence of specific chemical anticonditions in other parts of the world, but to the absence of specific proconditions in those in which they prosper. There is nothing to suggest that this general principle does not hold for animal parasites, including schistosomes; or that the antibodies which appear in the host are in any way inimical to the parasites, and do not merely serve to neutralise their toxins, for, as has been noted, these antibodies remain in high titre at a time when further decrease of the fluke-population is held to have ceased. The Bombay work affords, too, evidence that some immunity in the ordinary sense can be acquired, that one parasitic invasion confers some protection against a second. In a first infection in the monkey, *Macacus sinicus*, schistosomulæ reached a certain stage of development before dying. An attempted reinfection three months after a first one resulted in almost complete failure. Moreover, M. Ozawa[4] found that, of five dogs infected with *S. japonicum*, cured by stibnal and reinfected, one proved altogether refractory to reinfection, and in the others symptoms were slighter and the worms which lived were fewer and less well grown than in five control dogs who all were primarily infected at the same time as the others were reinfected, the same amount of the same infective material being used in all cases.

It has been asserted that when a cured patient becomes reinfected his last state is deplorable. These findings suggest that it may be otherwise, particularly as Ozawa holds that injection of a vaccine prepared from schistosomes immunises as satisfactorily as a previous infection. The Bombay workers call urgently for the adequate serological and pathological investigation of human cases of infection by male schistosomes alone. Perhaps these cases hold the key to the acquisition of an acquired immunity. There is, at all events, need for early intensive study of a matter which affects the health of millions.

MEDICINE AND THE LAW.

The Death Sentence.

THE Select Committee on Capital Punishment has made three definite recommendations. These are, first, that a Bill be forthwith introduced and passed into law for abolishing the death penalty for an experimental period of five years in cases tried in civil courts in times of peace; secondly, that meanwhile the Royal prerogative of mercy should be exercised in all cases in England and Scotland to commute the death sentence; thirdly, that the substituted penalty be the penalty now attached to reprieved murderers. Alternatively, if Parliament should decide to retain the death penalty, then the Committee makes four other recommendations: (1) the rules in McNaghten's case to be "revised" so as to give fuller scope to general medical considerations, and to extend the area of criminal irresponsibility in the case of the mentally defective and of those who labour under some distinct form of insanity; (2) the death penalty to apply, in law, to women on the same terms as to men, and the Home Office and Scottish Office, when tendering advice as to the exercise of the prerogative of mercy, to continue to take each case on its merits; (3) no one under 21 to be sentenced to death; and (4) a larger exercise of the prerogative of mercy, the line to be raised higher and this change to be effected by resolution of the

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[3] Arch. f. Schiffs- u. Tropen-Hyg., 1930, xxxiv., 527.

[4] Japan. Jour. Exper. Med., 1930, viii., 79.

House of Commons. The next step lies with the Home Office, and the Home Secretary has announced that he means to take time to study the Committee's report, though doubtless he will be pressed to take immediate action in respect of outstanding sentences.

The report,[1] indeed, well deserves study. Garnished with not a little literary and theological citation, it gives an interesting historical summary of the gradual mitigation of the past severities of our law. It is a pity that, although the report presents the appearance of unanimity, it does not contain the views of several members of the Committee, who, it will be remembered, withdrew from the deliberations. No doubt the opinions of these absentees, who happened to include the majority of the representatives of the legal profession, will be expressed later in Parliamentary debate or otherwise. The general conclusion of the report is that the abolition of capital punishment will neither endanger life or property nor impair the security of the State; in support of this conclusion the experience of foreign countries is adduced. It is urged that successive mitigations of punishment in England have not had the ill-effect which opponents foretold. The main arguments on both sides are well enough known. The abolitionists uphold the sacredness of human life; they point to the fallibility of human justice, the doubtful value of capital punishment as a deterrent, the brutalising effect of executions, and the reluctance of juries to give a true verdict when the only punishment is death. The anti-abolitionists reply that capital punishment is the greatest deterrent to premeditated murder, that, if this deterrent is removed, burglars and other criminals will more readily carry and use lethal weapons, and that at present the death sentence is not inflicted where there is any legal or moral doubt. In this connexion the latest available statistics for England show that in 1928, when 23 males were condemned to death, 9 sentences were commuted "in mitigation of sentence"; these words are explained as meaning that weight is given to a recommendation from the judge or to such extenuating circumstances as youth, provocation, or mental disturbance. In the 50-year period from 1880 to 1929 there were 564 reprieves against 713 executions; in the 30-year period from 1900 onwards there were 327 reprieves against 423 executions; in the 10-year period from 1920 there were 91 reprieves against 138 executions. The first of the Committee's conditional recommendations—that the criminal irresponsibility of the insane be enlarged—will give an opportunity to review the Atkin Committee's report, issued in 1923 after the case of Ronald True had stirred public feeling, a report which never satisfied the medical profession. The second recommendation—for sex equality—may be logical but is probably contrary to popular sentiment. The third—as to the age-limit—may secure general support. The Children Act of 1908 forbade the hanging of young persons under 16. So far as this step gave statutory backing to existing practice, it was a modest effort for actually no one under 18 has been hanged for 40 years; a further raising of the age-limit both in practice and in statutory recognition thereof may now be due.

As to the substantive recommendations of the Select Committee there will be weighty critics who think a 5-year experimental period too short. Many would wish to see some move towards checking the exaggerated publicity given to crimes of murder. The views of the Home Office witnesses before the Select Committee are not clearly given in the report, but will presumably appear later in the Minutes of Evidence. It would be surprising if the Home Office did not deprecate undue reliance on the Royal prerogative of mercy, for there has been in the past the strongest reluctance to use that weapon as an instrument of policy. If public opinion favours the abolition of the death penalty, Parliament should give effect by statute to the general wish. The growth of restrictions on the occasions when capital punishment may be imposed for military offences may be seen in the Army and Air Force (Annual) Acts of 1925, 1928, and 1930. The recent report will help to focus public opinion on a problem which ought not to be approached merely along the lines of party politics.

Dangerous Drugs Act Records Inspection.

The Dangerous Drugs (Consolidation) Regulations, as every medical practitioner knows, require the keeping of various records of drugs or preparations supplied. Article 11 of the Regulations, dealing with the registers to be kept (including the "day book" and "separate book" maintained by a duly qualified medical practitioner), enacts that all these records are to be kept on the premises and are to be "at all times available for inspection." These last words, one has always supposed, are to be interpreted with reasonable latitude. Some light on their construction has been thrown by recent proceedings in what seems otherwise rather too trivial a case to have justified police intervention. The manager of a chemist's shop at Liverpool kept the requisite register. It was kept in a locked cupboard of which he himself carried the key. One day last February he went out to lunch about midday, taking the key with him. A few minutes later a chief inspector of police came to the premises to inspect the register which, being locked up, was not at the moment "available for inspection." The inspector went away, returned later in the afternoon, and then duly inspected the register which was then produced by the manager. In these circumstances the manager was charged with a breach of the regulations. His defence was the sensible reply that "at all times available for inspection" must mean "at all reasonable times," and that there was no evidence that the register was not available for inspection at all reasonable times. The Liverpool stipendiary magistrate nevertheless convicted the defendant and fined him 20*s.* and, on a case being stated to the High Court, the King's Bench Division has held that the conviction was right. The judges did indeed say that some limitation must be put upon the words "at all times," inasmuch as Parliament could not have intended that the register should be available in the middle of the night or on Sundays when the shop was shut. But they held that a reasonable limitation was to construe the words as meaning "at all times when the premises are open for business." The regulations did not require that the authorised person must be at all times available, but that the register must be at all times available; so, if the authorised person left the premises, he must either leave the key of the cupboard with an assistant or must not lock the register up. Another point had been taken by the defendant—namely, that the business belonged to a limited company, he himself being the manager under the direction of the superintendent appointed by the company for the purposes of Section 3 (4) of the Poisons and Pharmacy Act of 1908. He contended that, according to the regulations, the person who is responsible for keeping the register is the person who "keeps open shop for the purpose of retailing poisons"; this person, he said, was the company and not himself. The judges held, however, that the person bound to keep, and make entries in, the register is the person authorised to manufacture and sell drugs. This was the defendant; he had failed to have the register at all times available and was rightly convicted.

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[1] H.M. Stationery Office. 1*s.* 6*d.*

If "at all times available for inspection" in the case of a chemist's register means at all times when the premises are open for business, what will the words be interpreted to mean in the case of the records of a medical practitioner? The doctor is on duty, if his services are required, at any moment, day or night. Is it to be suggested that his day book and separate book must be available for inspection at any minute of the 24 hours? The rather arbitrary action taken at Manchester suggests that Article 11 had better be re-drafted.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

GOVERNMENT GRANTS AND HOSPITAL SWEEPSTAKES.

FOR many years certain of the Dublin hospitals have been in receipt of Government grants. Most of them date from the eighteenth century, and were originally made by the old Irish Parliament, although in some cases the amount has been varied. They were made at various times in response to special appeals or to meet special conditions of the day. They vary greatly in amount, some being for small sums such as £50 or £100 a year, while in the case of the House of Industry Hospitals (Richmond, Whitworth, and Hardwicke) the annual grant, until quite lately, was £7000. This was almost enough for its upkeep, and before the war it made little appeal to public charity. It was, in fact, generally regarded as "a Government hospital," and the members of its staff and of its board of governors have to receive the approval of the Government before formal appointment. After the war this hospital found the Government grant insufficient for its needs, and it sought other sources of income, both in subscriptions from the charitable public and in contributions from patients. In recent years the Government grant has varied, and its amount in the present year was £5000. The House of Industry group of hospitals did not share in the recent sweepstakes on behalf of certain Dublin hospitals, but it has been accepted as a participant in the next sweepstake. The Meath Hospital, which also receives a Government grant, is in similar case. These hospitals have now been notified by the Department of Finance of the Irish Free State that, in view of the benefits they are likely to receive from sweepstakes, it is not intended to make provision for any grant to them in the estimates for the coming year. This is a severe blow to the hospitals, and one which they did not expect when they decided to share in the sweepstake. The attitude of the Department of Finance, however, is quite intelligible, if one may assume that the results of future sweepstakes are going to equal those of the past. It is to be noted that the threatened withdrawal of the Government grant only refers to the present year. Some question arises, indeed, as to whether the Government can withdraw its grants by a mere departmental minute. It is suggested that some at least of the grants to hospitals have a statutory basis and that they cannot be withdrawn except by fresh legislation. No doubt this is a matter which will be carefully considered by those responsible for the management of the finances of the several hospitals.

OPTICIANS AND "OPTICAL BENEFIT."

Some months ago it came to the knowledge of the Irish Medical Committee that the National Health Insurance Commissioners of the Irish Free State were giving their approval to a scheme of "optical benefit" for insured persons, under which glasses were to be supplied by opticians without any surgical examination of the eye. The Irish Medical Committee drew the attention of the Commissioners to the danger of permitting glasses to be ordered without a proper examination of the eye, as opticians had not the requisite surgical and pathological training to discover other than mere optical defects. The Committee suggested that glasses should only be supplied on the prescription of ophthalmic surgeons. The Commissioners have now replied, declining to accept the suggestion of the Committee on the ground that it would have the effect of precluding a large number of insured persons from participating in optical benefit because "(a) the number of ophthalmic surgeons is limited, and they are only available in the cities and larger towns of the Saorstat; and (b) the money available for optical benefit is limited, and the provision of optical appliances on the recommendation of qualified opticians affords the widest field for the benefit of the insured persons."

The use of the term "qualified opticians" by the National Health Insurance Commissioners cannot pass without protest. The word "qualified" suggests not merely a certain degree of skill, but a recognition of such skill by some competent authority, itself recognised by the State. For example, a "qualified medical practitioner" is a registered medical practitioner, and a qualified dentist is similarly a registered dentist. Neither in this nor in any other sense are there "qualified opticians" in the Irish Free State, for the possession of a diploma granted by some association or other, not itself recognised by the State, is no evidence of qualification. The use of the term by a Government department is peculiarly mischievous in that it is likely to suggest to the public that there is a class of opticians possessed of some legal or quasi-official status. Moreover, the suggestion of the Commissioners that it would not be practicable to arrange for the examination of claimants for benefit by an ophthalmic surgeon is not convincing. It is true that the number of such surgeons outside the larger towns is small, but the proportion of insured persons outside the larger towns is also small. It would be quite possible to arrange for an occasional visit by an ophthalmic surgeon to areas where none is ordinarily available, and the expense of such visits would not be prohibitive. Such visits have been arranged in some areas in connexion with the medical inspection of school-children, and many of the county hospitals have a visiting ophthalmic surgeon. The Commissioners do not appear to have given due consideration to the dangers which may arise from the overlooking or cloaking of serious disease by the provision of spectacles by persons without medical training.

TELEPHONES AND MEDICAL SERVICE IN RURAL AREAS.

Dr. Sean Tubridy, a dispensary medical officer in Connemara, has drawn the attention of the commissioner in charge of the public services of County Galway to the need for extension of the telephone service in remote districts. He points out that a messenger [illegible]t to sum[illegible]m may have to travel as much as 20 miles, thereby causing a delay which, in some cases, may lead to loss of life, and in all cases to great hardship. He asks that the country post offices should be equipped with telephone facilities. The commissioner promised to give the matter his immediate personal attention. The problem is, however, not peculiar to Connemara.

RETIREMENT OF COLONEL FORREST.

Great regret has been caused by the decision of Colonel J. V. Forrest to retire from the position of medical superintendent of the Royal Victoria Hospital, Belfast. Colonel Forrest has rendered invaluable services to the hospital during the past ten years. He took a very active part in supervising the large extensions to the building which were opened a few years ago, and he made important suggestions for their planning. His coöperation and wise counsel were especially helpful in connexion with the new maternity hospital and new children's hospital which are being erected in the grounds adjoining the Royal Victoria Hospital.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

A CHECK ON HEALTH INSURANCE CLAIMS.

THE presidential order mentioned in my letter last August (THE LANCET, 1930, ii., 419) has become law by the agreement of the Reichstag, and has had the desired effect of reducing the expenses of the Krankenkassen (sick-clubs). It may be recalled that the most striking provision of the order was that every insured person desiring to consult a medical man has to pay 6*d*. for a voucher allowing him to do so, and the same amount for every prescription in a pharmacy. This, of course, made possible considerable reductions in contributions to the Krankenkassen by their members, but another result has been that patients often abstain from consulting a medical man or do not fetch the prescribed medicine because they cannot or will not pay the sum demanded. This has applied not only to slight ailments for which a medical man would not have been consulted at all if he was to be paid by the patient himself, but also to severe cases such as injuries, infections, and venereal diseases. Another consequence has been that the number of patients in hospitals has diminished considerably because members of Krankenkassen, who form the great majority of hospital patients, are, except in urgent cases, admitted only on the order of medical men, and these, for the reasons stated, are consulted less than formerly. In the Berlin hospitals in ordinary times without an epidemic 6–8 per cent. of the existing beds are unoccupied, but this number has now risen to 16–20 per cent., and an old Berlin hospital, which for many years has served as a reserve hospital for light cases, has had to be closed in consequence. In Frankfort o/M the municipal health office reports that only 73 per cent. of their beds are occupied.

Under a new order just published the unemployed members of Krankenkassen are exempted from paying for the voucher, whilst other categories, notably persons suffering from infectious diseases, tuberculosis, and venereal diseases, will have to pay a smaller sum.

RELIEF OF PAIN IN CHILDBIRTH.

Prof. Hugo Sellheim, the well-known professor of gynæcology at Leipzig, writing in the *Centralblatt für Gynäkologie*, says that the pains of delivery must be alleviated notwithstanding religious contentions, and recommends the administration of narcotics. Small doses, he says, do not delay labour, but rather regulate it by strengthening bearing down. In order to help every woman in labour, including those without medical assistance, Sellheim has composed what he claims is an efficacious and innocuous preparation to be kept ready in pharmacies. He calls it Scopan, and it consists of half of the maximal doses of omnopon and of scopolamine. According to the instruction printed on the bottle for the midwife, the compound must be given about 30–40 minutes before the probable passing of the head through the pelvic outlet. As omnopon and scopolamine are among the remedies which may not be sold without a prescription, the medical man may prescribe the compound during pregnancy to be handed to the midwife. If severe pains develop in the first stage of labour half of the dose may be administered at this stage.

A HOME FOR DIABETIC PATIENTS.

In Garz, on the island of Rügen, on the Baltic Sea, a home for diabetic patients of the working classes has been opened. Such people have hitherto had to stay in a public hospital because the cure in a sanatorium is too expensive. When working they are not in a position to follow the dietetic prescriptions. The feature of the new home is that the patients, during their stay, may work and are paid for their work. Their expenses will thus be small, and they may stay a comparatively long time in the home, which has not the character of a hospital. Belonging to the home there are estates where the patients can do agricultural and gardening work, and workshops where they can pursue their own trade. The staff will partly consist of diabetic patients.

ALUMINIUM AND COOKING.

The use of cooking utensils made of aluminium has been held responsible for many diseases, especially for the increase of cancer. Prof. K. B. Lehmann, of Würzburg University, has lately examined the alleged dangers of aluminium vessels, and points out that the statement that cancer has increased tenfold in U.S.A. since the introduction of aluminium vessels is erroneous according to the official statistical records. Aluminium, he says, has no action on the heart or the vessels. Natural food contains an average daily quantity of 20–25 mg., and if aluminium vessels are used, about 40–60 mg. In America where the use of baking powder with aluminium is allowed, about 250 mg. are daily swallowed, but this quantity is too small to do any harm to the consumers.

AUSTRALASIA.

(FROM OUR OWN CORRESPONDENT.)

MEDICAL REGISTRATION IN THE FEDERAL CAPITAL TERRITORY.

ON Nov. 1st, 1930, an ordinance came into force which provides for the registration of persons engaged in medical practice in the Federal Capital Territory, which has an area of 940 square miles with an estimated population of a little over 9000. The administration will be in the hands of a board of medical practitioners which will, in the first instance, consist of Sir Colin Mackenzie, Dr. M. J. Holmes, Dr. L. W. Nott, and Dr. A. G. Butler. Appeals from the decisions of this board will be to the High Court of Australia. Most of the rules are in accordance with those of the various States of the Commonwealth, but the following clause is not included in any of the Acts in force in the States:—

> 34 (1) "A person other than a registered medical practitioner shall not (*a*) give or perform for fee or reward any medical or surgical service, attendance, operation, or advice; (*b*) advertise or hold himself out as being, or in any manner pretend to be, or take or use the name or title (alone or in conjunction with any other title, word or letter) of a physician, doctor of medicine, licentiate in medicine or surgery, master in surgery, bachelor of medicine or surgery, doctor, surgeon, medical qualified or registered practitioner, apothecary, accoucheur, or any other medical or surgical name or title; or (*c*) advertise or hold himself out, directly or indirectly by any name, word, letter, title or designation, whether expressed in words, or by letters, or partly in one and partly in the other (either alone or in conjunction with any other word or words, or by any other means whatsoever) as being entitled or qualified, able or willing to practise medicine or surgery, in any one or more or all of its branches, or to give or perform any medical or surgical service, attendance, operation or advice."

There are now seven different legal enactments in Australia governing the registration of medical practitioners, and a practitioner is compelled to seek fresh registration when he passes from one State to another.

ANTARCTIC RESEARCH.

The Mawson Antarctic Expedition is again leaving on Nov. 22nd from Hobart in the *Discovery*, this time to survey the antarctic region, from Cape Adare to Queen Mary Land, and the adjacent islands. Last year the expedition left from Cape Town and surveyed 1000 miles of coastline in the region of Enderby Land. Dr. W. Wilson Ingram, who is again accompanying the expedition as medical officer, has given a number of lectures in Sydney, describing the previous expedition and the prospects of the new one. Last year, he says, the health of the personnel was very good. There were a few minor casualties, but no serious illnesses. Owing to the difficulty of obtaining fresh meat, it was feared that scurvy might appear amongst the crew, and as only tinned food was available during the last three months of the cruise, a daily compulsory issue of fresh orange juice was made. This juice was obtained from the Tomango orange factory in Durban, carbon bisulphide and cane sugar being the preservatives used. This proved so successful on the last voyage that on this voyage 50 gallons of Australian orange juice preserved in the same way is being taken. The only sign of scurvy occurred in the steward detailed to issue the daily ration of orange juice, who apparently considered himself exempt from the ration. When visiting Kerguelen Island it was found that the famous Kerguelen cabbage, which was used as an antiscorbutic by Captain Cook, had been almost entirely eaten out by rabbits left by the German *Gauss* expedition. On the present expedition, for vitamin A a ton of Australian butter is being taken, and for vitamin B yeast cultures and yeast bread will be eaten instead of soda bread.

On the last cruise Dr. Ingram carried out a certain amount of bacteriological research, and examined the intestinal contents of some birds and fishes. He found that where parasites were absent from the intestines of birds, such as the Wilson petrel, the gut was sterile, otherwise not. He also found that culture plates exposed on the antarctic continent were sterile after five days incubation. Specimens of snow and ice examined were, in all cases, sterile. This is contrary to the findings of Dr. A. Maclean, the medical officer of the previous Mawson expedition, but agrees with those of Dr. Pirie who accompanied the Scottish national expedition. Before publishing any of this work Dr. Ingram intends to repeat these investigations aided by the knowledge gained on the previous expedition.

Dr. Ingram is an honorary physician to the Royal North Shore Hospital, Sydney, and since his return from the Antarctic, has been closely associated with the foundation at the Hospital of the Kolling Institute of Medical Research, of which he is Director. The building of this Institute is now almost complete.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

COST OF ILLNESS AND FUNERALS.

THE publications of the Committee on the Costs of Medical Care are now becoming more frequent. Publication No. 7 reports a study on capital investment in hospitals and is also published by the University of Chicago Press as a book "The Public's Investment in Hospitals." It is found that 7000 hospitals in the United States represent a capital investment of over 3 billion dollars. Most of this capital investment has been furnished by government and by non-profit associations. The hospitals are thus, generally speaking, owned by the public, and the public can only get a fair return if they are economically and fully used. The investment would be more profitable if hospitals were "integrated with the total medical activities—preventive, diagnostic, and therapeutic—of the community." Besides its regular publications the Committee is now issuing a series of "Miscellaneous Contributions."

The third of these is devoted to the expense of funerals, a subject that has been previously aired in this column. This study brings out very clearly the explanation of the excessive costs of burial in America. It is found that the proportion of undertakers to deaths has been steadily increasing since 1880. In that year there were 194·2 deaths per undertaker; in 1920 there were only 56·6. In New York City 8 per cent. of the undertakers handle 44 per cent. of the business. The remaining 92 per cent. of undertakers exist on an average of 25 funerals each per annum! In order to make a living out of two funerals a month it is obvious that the undertaker must fix his charges high. If the excessively high costs of funerals are to be reduced the business must be concentrated in fewer hands.

Another "Miscellaneous Contribution" (No. 5) inquires into the influence of illness and death in sending the public to moneylenders. It is found that no less than 28 per cent of the latter's customers come to him for emergency arising out of these causes. One bank reports: "in the last 20 months we have made available in cash to doctors, dentists, and hospitals more than $12,000,000 on behalf of [36,000] patients who otherwise might have had to forego proper care, might have had to ask charity, or else delay payment altogether." Interest on these loans is at a rate varying from 12 to 42 per cent. per annum. It is clear that the alternatives to health insurance are not without their drawbacks.

EFFECT OF THE ECONOMIC DEPRESSION.

Speaking recently over the radio, Dr. Thomas Parran, Jr., the Commissioner of Health of New York State, declared that there were already indications that a continued economic depression would be reflected in the death-rates, not only through retrenchment in public health expenditure, but also through the increase of such diseases as tuberculosis and infantile broncho-pneumonia that are favoured by poverty. In looking to the future Dr. Parran gave first place to research and second to the development of adequate administrative machinery in public health. "The pressing problem of the future," he said, "is to provide not only for preventive services through more efficient health departments but for treatment services through community hospitals and dispensaries in which the physician will be compensated for the services he renders; in which the patient will need to pay only for that part of the cost he is able to bear; and for which the community, through taxes, will bear the remainder of the cost of such services."

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of three counties:—

Name of county and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Warwickshire (357,140)	16·3	12·7	0·87	1·30	2·5	2·2	60	34	4·3
East Sussex . (270,700)	12·7	13·7	0·73	1·85	2·4	2·9	50	21	2·9
East Suffolk . (209,950)	15·6	12·9	0·82	1·55	2·4	2·4	48	24	5·1

Registered stillbirths per 100 live births: Warwickshire —, East Sussex 3·4, East Suffolk 4·6.

Warwickshire.

Dr. A. Hamilton Wood reports that the death-rate is 2·6 up on that of the previous year, and that about 80 schools were closed as the result of the influenza epidemic. Two important applications have been made to the county council under the Local Government Act, 1929—one for a new water-supply in the rural district of Brailes, and the other for a sewage disposal scheme in that of Warwick. Progress is being made in preventing the pollution of the rivers. As the result of good work in the Upper Tame basin, and the improved modern treatment of Birmingham sewage Dr. Wood foresees the time when the Tame will no longer be dubbed the open sewer of Birmingham. As regards the Avon—the Leamington effluent is now satisfactory and the Warwick scheme is making progress, but the Coventry effluent is not likely to be much improved by the new works in progress for some two years. The Sowe, a tributary of the Avon, needs careful watching owing to innumerable small sewage works attached to building estates on the outskirts of Coventry. In June a conference of the interested authorities considered the formation of a Rivers' Board for the Severn, and expressed general approval of the proposal. Dr. Wood thinks it would still be desirable for county councils to retain their supervisory powers over the rivers in their areas, although actual inspection would be carried out by the technical officers of the Board.

During the summer there was a very long waiting-list of patients for sanatorium treatment, and a partially successful endeavour was made to provide for some patients in outside sanatoriums. Of the 5821 births, 3174 were attended by midwives as midwives. and 1032 by midwives acting as maternity nurses. The remaining 1615 were attended by doctors either alone or with the help of nurses or other persons unqualified to practise midwifery. There is surely little excuse now, says Dr. Wood, for the engagement during confinement of nurses or other persons who are not trained or certified as midwives. No new nursing associations have been formed, but considerable reorganisation has been done. Eight associations have now provided their nurses with cars and four with motor-cycles. Such antenatal work as is done is conducted by the county assistant medical officers. There were 283 new cases, 193 of which attended the clinics of the two county maternity homes. The Rugby home had an unfortunate outbreak of puerperal fever at the end of February, which was at first mistaken for influenza. Three patients were removed to hospital, where one subsequently died. Orthopædic facilities are mainly based on the hospitals at Coleshill and Manfield with other hospitals for "short stay" cases, and ten out-clinics. A new clinic was opened for the northern district in August, and when a proposed clinic at Solihull materialises the whole county will be covered. Owing to the expense, however, hospital provision has been limited and there were 32 cases on the waiting-list at the end of the year. The patients receiving treatment during the year numbered 749, 543 of school age, and 206 of pre-school age.

The only reference to the Housing (Rural Workers) Act, 1926) is the regret expressed by Dr. L. L. Fyfe (Stratford-on-Avon R.D.) that nobody has taken advantage of this Act.

East Sussex.

Dr. R. Ashleigh Glegg reports that during the year a scheme for the prevention and treatment of crippling was inaugurated. The scheme is based on Chailey Heritage Hospital, with out-patient clinics at Lewes, Hailsham, and East Grinstead. Dr. Murray Levick, hon. medical officer of the hospital, and the R.M.O. conduct the clinics and an orthopædic nurse attends them twice weekly to give treatment. The dental staff has been increased in order to deal with mothers and pre-school children. The three dental surgeons engaged in the work report that an encouraging start has been made. Dr. Glegg complains that only one of the local authorities in the county (Hove) takes samples of milk for examination as to tubercle infection, and he emphasises his complaint by pointing out that during the last four years 1651 cows have been slaughtered under the Tuberculosis Order, of which only 44 were discovered as the result of the sampling of milk supplied by farms in the county. If more adequate sampling were undertaken it would be possible to stop the milk of tuberculous cattle much earlier than at present. Dr. Glegg regrets the small use made of the Housing (R. W.) Act. Up to the end of 1929 grants for assistance in 14 cases had been made, totalling £1891.

East Suffolk.

Dr. B. Wood-White reports that the water-supply of the villages is in the main liable to pollution or inconvenient. Water from shallow ponds or wells is used for drinking purposes and much labour is spent in carrying water from distant wells. He anticipates that contributions from the county council under the L. G. Act, 1929, to wisely conceived rural water schemes will be money well spent. The town of Saxmundham has installed a sewerage scheme, and Woodbridge and Halesworth are now the only towns, with populations exceeding 1500, that have made no provision for a water-carriage system. For four years the Gipping was grossly polluted by silkworks at Stowmarket. At long last the works found a complete remedy and six months later were closed down for economic reasons. East Stow R.D. has made great progress in the erection of houses, the local authority having erected 166 during the year. Dr. Wood-White was called upon by the parish council of Tuddenham (four miles from Ipswich) to inspect the housing accommodation. The 67 houses in the parish, which he inspected, were much in need of repairs and at least 17 urgently required improvement, which could have been provided under the Housing (R. W.) Act. He regrets the small use made of this Act and considers 93 a sorry figure for the number of dwellings improved in his county in three years. Systematic housing inspection by the officials of the rural district council, followed by vigorous action, would soon make an enormous difference. Dr. Wood-White also points out that the tuberculosis order is of little or no avail without veterinary inspection of the herds. The 215 cases of diphtheria had the high case-fatality of 10 per cent. It is difficult to secure the attendance of adult contacts at the dispensaries, and there is no hospital accommodation for advanced tuberculosis among women in the northern part of the county.

PORT SANITARY AUTHORITIES.

London.

In his annual report to the Port of London Sanitary Committee for 1929 Dr. C. F. White mentions that the tonnage entering the port increased in the year by over a million tons. There arrived from abroad 15,932 vessels, but no cases of plague or cholera appeared, nor were any rats found infected with plague either on ships or on shore. Of small-pox four cases were sent to hospital and also 10 cases of typhoid fever from a ship that arrived from South Africa. The relation between the cases could not be traced. The chief infectious diseases mentioned as occurring were influenza, pulmonary consumption, chicken-pox, measles, malaria, and enteric fever; these among crews and passengers. The hospital at Denton, near Gravesend, got a new cleansing and disinfecting station, a new post-mortem room and mortuary. The boys' training ships were remarkably free this year from infectious diseases; Schick-testing and immunisation continued on the *Cornwall*. No diphtheria case is reported from any training ship. Venereal disease leaflets, notifying where free treatment may be obtained, are distributed to incoming ships. The sanitary inspectors made 15,616 examinations of vessels, 5450 of shore premises; the nuisance most frequently found was, in each group, want of cleanliness; on vessels 1417, ashore 914. Crew accommodation is being carefully considered, a new minimum standard is overdue, but that existing in many ships is far above the minimum. Defects are noted as regards leaks, lighting, heating, ventilation, and w.c.'s. Six rat-searchers were appointed, to work under the sanitary inspectors, to seek for evidence of rat presence and give special attention to ships from infected ports, visiting these last daily. They also examine the shore premises continuously and systematically, sending daily rats found dead or trapped—packed in linen bags wet with kerosine (which kills the fleas) and secured in tin boxes—to the pathological laboratory of the Dreadnought Hospital at Greenwich. Of 1275 examined this year none was found infected. This is all planned so that any plague infection of shore rats, if such should occur, shall be quickly discovered and treated. To kill rats on board, ships are fumigated with hydrogen cyanide or sulphur dioxide. Dr. White thinks that one company which fumigates its ships with hydrogen cyanide after every voyage, to get rid of insects, has made its ships "almost if not absolutely" rat-free. Persistent attention is given to rat-proofing of warehouses on shore. Two ships were convicted of causing nuisance by smoke. All the sanitary inspectors are also qualified as inspectors of food. Much assistance is given to them by custom house officers and by importers; inspection has been further lightened by the fact that this year it has been done more carefully abroad, particularly noticeable in relation to caseous lymphadenitis and actinomycosis. Of 22 thousand carcasses, 2 per cent. were condemned, but of those from New Zealand only 0·9 per cent. The food condemned and destroyed or otherwise disposed of amounted to no more than 1743 tons. Of 40,073 aliens, 23 transmigrants and 9 others were certified and refused admission. The canal boats inspected were 82; of these a quarter had children (averaging 4·8 in each) on board. Many new water-closets were provided in the docks. The water-supply of ships in the port is mostly direct from the mains; there are 20 water barges, all registered annually by the Port of London Authority, after inspection and approval by the medical officer.

Newport (Mon.).

Dr. J. Howard-Jones states that 5400 ships entered the port, and that 1507 were inspected—half of those from abroad, a fifth of those in the coasting trade; 358 of them showed defects, all of which were remedied. No case of plague or small-pox occurred; tubercle cases were fewer than the average. Of rats 1966—all black—were killed on board ships; 574—all brown—in the docks; roughly a quarter were males. No plague-infected rats were found. Drinking water is supplied to ships from the town mains; there are no water boats. The defects on ships were either constructional or sanitary. The constructional were chiefly poor lighting, too little table and seating accommodation in forecastles, insufficient food storage in "weekly" ships where each man provides his own rations, dampness by condensation or leakage. The sanitary defects on 358 ships included 217 dirty forecastles, 84 choked and foul w.c.'s, 42 ships had accumulations of refuse on deck, 37 had defective stoves, 19 are reported to have had verminous living spaces. Dirty or verminous beds to the number of 1938 were destroyed.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 20TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 138 (last week 137); scarlet fever, 2000; diphtheria, 1451; enteric fever, 22; pneumonia, 1152 (last week 997); puerperal fever, 38; puerperal pyrexia, 108; cerebro-spinal fever, 10; acute poliomyelitis, 6; acute polio-encephalitis, 1; encephalitis lethargica, 12; continued fever, 1; dysentery, 7; ophthalmia neonatorum, 107. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 23rd–24th was as follows: Small-pox, 167 under treatment, 4 under observation (last week 189 and 5 respectively); scarlet fever, 1790; diphtheria, 2026; enteric fever, 11; measles, 89; whooping-cough, 121; puerperal fever, 22 (plus 9 babies); encephalitis lethargica, 121; poliomyelitis, 2; "other diseases," 47. At St. Margaret's Hospital there were 11 babies with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 71 (1) from measles, 8 (0) from scarlet fever, 10 (0) from whooping-cough, 43 (7) from diphtheria, 62 (9) from diarrhœa and enteritis under two years, and 58 (11) from influenza. The figures in parentheses are those for London itself.

No death from small-pox was returned from areas outside the great towns for the month of November last. The fatal case of enteric fever mentioned above was reported from Birmingham. Twenty-one deaths from measles occurred at Liverpool, 18 at Hull, 6 each at Bristol and Swansea, 3 each at Ipswich, Walsall, and Grimsby. Eleven deaths from diphtheria were reported from Liverpool, 2 each from East Ham, Birkenhead, Salford, and Leeds. Diarrhœa accounted for 10 deaths at Liverpool, 4 each at Birmingham and Manchester. The number of stillbirths notified during the week was 207 (corresponding to a rate of 41 per 1000 births), including 39 in London.

CORRESPONDENCE

NEPHROSIS AND ŒDEMA.

To the Editor of THE LANCET.

SIR,—We have read with interest Dr. Epstein's comments on the paper by us which appeared in THE LANCET of Nov. 8th, 1930. We feel that this and previous publications by us indicate our appreciation of his pioneer work on the causation of œdema. Discussing the various points raised in his letter, we have been careful not to attribute to him the theory that a lowering of the blood plasma protein content will cause renal lesions, and we must insist that there is no confusion whatsoever in our statements on this subject. Our observations were such as to make a contrast between them and those of Barker and Kirk inevitable.

Turning to the next point in his letter, we entirely disagree with his statement that the type of plasmapheresis observed by us "is totally different from that resulting from excretion of protein by the kidneys." The causation of the ascites has nothing to do with the point at issue, and since the major blood changes *and the subsequent œdema are exactly similar to* those occurring in nephrosis we feel that our analogy is justified. We know of no published evidence in support of the statement that "the proteinuria of chronic nephrosis is of a different nature and is (Dr. Epstein believes) an instance of selective and preferential excretion." In so far as we are aware there is no convincing published evidence concerning alterations in the constitution of the protein molecule in the various body fluids such as plasma, ascites, &c., in various pathological conditions. In fact the publications of Hewitt indicate that the proteins of the urine and the blood are identical in these cases.

Because "histopathology has thus far failed to account for the proteinuria of chronic nephrosis" is no adequate reason for postulating a hitherto unproven alteration in the constitution of the plasma protein molecule. Dr. Epstein has focused attention on what appears to be a separate entity amongst the cases loosely defined as "Bright's disease." We shall be deeply interested if he is ultimately able to establish that the pathogenesis of nephrosis is entirely independent of the kidney.

We are, Sir, yours faithfully,
T. IZOD BENNETT.
E. C. DODDS.
J. D. ROBERTSON.

Courtauld Institute of Biochemistry, Middlesex Hospital, W., Dec. 22nd, 1930.

VALUE OF RAMISECTION IN CASES OF SPASTIC WEAKNESS.

To the Editor of THE LANCET.

SIR,—Lord Moynihan complains that I have curtailed the passage from his Toronto address in which he spoke of "the somnolence of physiologists." He now gives the paragraph in full, and he emphasises the fact that he "quite deliberately made no reference whatever" to the value of ramisection in cases of spastic weakness. The significance of this omission did not escape me. But I may be pardoned for assuming that he referred to the work of Hunter and Royle on "The Influence of the Sympathetic Nervous System in the Genesis of the Rigidity of Striated Muscle in Spastic Paralysis"—for that is the only physiological research that these observers are known to have undertaken.

Perhaps Lord Moynihan will now tell us precisely to what other physiological researches he referred, when he wrote, "so the physiologists have similarly had their somnolence proclaimed by the researches of Royle and Hunter, Wade of Sydney, Robertson of Toronto, Judd, Adson, Learmonth, and others, as to the sympathetic nervous system, and its influence upon maladies so diverse as Raynaud's disease, Hirschsprung's disease, endarteritis obliterans, and retinitis pigmentosa." I gather that certain abdominal surgeons and others have recently discovered: (1) that the walls of the hollow viscera and the blood-vessels are largely composed of muscle; (2) that this muscle is supplied by the sympathetic nervous system; and (3) that division of the corresponding sympathetic nerve fibres produces an obvious physiological effect upon this muscle. These things and many more have been known to physiologists for many years. But surgeons generally have only just discovered that they are of some clinical importance.

It was obvious that, given a technique, which Hunter and Royle devised, for dividing the sympathetic *rami communicantes*, there were many diverse conditions which might be benefited by sympathetic ramisection. The surgeons named by Lord Moynihan, as well as others, have quite naturally explored these possibilities. But that is not physiological research. If "the carefully ordered sequence of names and the special list of diseases enumerated" by Lord Moynihan signify anything more than the clinical application of years' old physiological knowledge, we should very much like to know it. Meanwhile we retain our profound admiration for the work which physiologists have accomplished (in their sleep ?).

I am, Sir, yours faithfully,
A. S. BLUNDELL BANKART.

Harley-street, W., December 20th, 1930.

APPENDICITIS IN THE SCHOOLBOY.

To the Editor of THE LANCET.

SIR,—I read with interest Mr. Barrington-Ward's paper on this subject in your issue of Nov. 22nd, 1930. With most of his statements both the school doctor and the pædiatrist are likely to agree, but possibly the general practitioner, who sees appendicitis in earlier stages, may dissent from the view that 90 per cent. of the cases are obstructive. We know so little about the ætiology and onset of appendicitis that it hardly becomes us to talk dogmatically about what takes place in a first attack. I know that in my own case, as a boy and as an adolescent, varieties of diagnosis were made by very competent doctors, including some of the best-known surgeons and physicians on London hospital staffs. Since then I have been exceedingly sceptical of many of the "alternative diagnoses." However possible these may be in older children, in the case of schoolboys they rarely prove to be justifiable excuses for delaying operation. I know that scarlet fever, pneumonia, and, indeed, any acute or subacute infectious disease is still sometimes mistaken for an attack of appendicitis, just as frequently perhaps as in smaller children attacks of appendicitis are diagnosed "cyclic vomiting," "acidosis," or "glycopenic disturbance"; but surely no experienced practitioner will make that mistake. Mr. Barrington-Ward's surprise at the relatively small amount of physical discomfort which seems to attend such attacks in growing boys I cannot share, for one knows that at such ages peritoneal pain is much less acute than in young children or in adults. That, indeed, is the great danger of the disease in the puberal and post-puberal stage—its insidiousness and its rapid development into complications. I do not believe that it is more fulminant at that age, but the reason why one sees more fulminating cases then is because the signs do not give rise to symptoms. The reason for that again is not, probably, psychological, but merely physiological.

I regret that Mr. Barrington-Ward has not emphasised the importance of rectal examination in *all* cases of suspected appendicitis. It is one of the few ways in which one can differentiate a vesiculitis, a condition by no means uncommon in boys. Persistent vomiting largely depends on the condition of the boy's stomach at the time when he feels the colicky pain; as the patients are usually "off their feed" for at least 24 hours before they feel any other symptoms, vomiting is much rarer than it is in small children or in grown-ups. I have found unilateral dilatation of the pupil and unilateral flushing of the face on deep pressure on the affected side of distinct use in the differential diagnosis.

May I add one word in regard to operation? As a pædiatrist I much object to the statement "no preliminary treatment is necessary." The prolonged convalescence in these cases, the sometimes serious psychological after-effects of the operation itself, and the discomfort of the patient can all be avoided, in my opinion, by proper and adequate feeding before the operation. There can be no possible objection to allowing the boy to be operated on to suck barley sugar, drink sugar and water solutions, or partake freely of weak sweetened tea before the operation, nor to allowing him carbohydrate solutions immediately he gets conscious after the operation. With proper feeding morphia is entirely unnecessary in uncomplicated cases, convalescence is much shortened, and the comfort of the child much enhanced. I still fail to see why my surgical colleagues are so impressed by the antiquated custom that nothing should be given by mouth after such operations except water, and my own view is that rectal salines and glucose are much more likely to lead to peristalsis, discomfort, and, in suppurative cases, to atony, than free administration of watery solutions by mouth.—I am, Sir, yours faithfully,

C. LOUIS LEIPOLDT,
Visiting Pædiatric Physician, New Somerset Hospital, Cape Town.
Dec. 9th, 1930.

BACTERIOLOGICAL EXAMINATION OF WATER.

To the Editor of THE LANCET.

SIR,—Your series of special articles on Clinical Interpretation of Aids to Diagnosis has been much appreciated by a legion of readers. I have been specially interested in Nos. LXXXVIII. and LXXXIX., as the subject Bacteriological Examination of Water is one to which I have devoted a lifetime of study. I am so closely in agreement with most of what Prof. Beattie has written that I trust he will forgive me for offering a few words of *constructive* criticism.

I think Prof. Beattie has rather missed the point that the basis of British water bacteriology was founded, over a quarter of a century ago, on the bacteriological correlation, quantitatively and qualitatively, of impure substances—e.g., fæces and sewage—with waters of diverse sort including those remote from undesirable pollution. The colon bacillus, the streptococcus, and, but to a less extent, the *B. enteritidis sporogenes* (now more commonly called *B. welchii*) tests are examples of tests which form the keystone of the arch which has placed this country in the van of progress in water bacteriology. We greatly fear the contamination of water with excremental matters, but logically we should not condemn or appraise water, or frame standards, without exploiting our precise knowledge of the quantitative and qualitative bacteriology of these objectionable substances and of the relative (or absolute) absence of comparable bacteria from waters which have escaped the scourge of civilisation—fæcal pollution.

I do not venture to criticise Prof. Beattie's standards, although some may think that they err a little on the side of generosity—a seasonable virtue at the close of 1930. He makes no allusion to Wilson's bismuth sulphite iron medium in connexion with search for typhoid bacilli. Doubtless he has not wished to overburden his narrative with highly technical matters, but there are several things to be considered in connexion with water-supply—e.g., sources and final product. In relation to the former, Wilson's medium has thrown, in my opinion, a fresh flood of light on water bacteriology.

I am, Sir, yours faithfully,
ALEXANDER C. HOUSTON, M.B., D.Sc.
Fairhazel-gardens, N.W., Dec. 29th, 1930.

A PLEA FOR MORE CAREFUL TONSILLECTOMY.

To the Editor of THE LANCET.

SIR,—I am surprised that there has been no reply to Mr. McLaggan's plea for more careful tonsillectomy which appeared in your issue of Nov. 22nd, 1930 (p. 1150). As a general practitioner, it is with much diffidence that I add my plea to his. I have had ten years' experience as a clinical assistant to an ear, nose and throat department, and differ perhaps from a specialist in that any private patient on whom I operate usually attends me afterwards and the end-results are known to me. In consequence I cannot risk doing any work that would allow of criticism to be made at a later date. The old inexactitude that the tonsils have grown again must become a defence of the past, and it is preferable to tell a patient, if tonsillectomy has been incomplete, that part has been left behind and may at a later date have to be removed.

There is a growing tendency to attack medical men on very little provocation, and it is not improbable that a case may yet be fought on the failure of a surgeon to complete the operation of tonsillectomy for which he receives his fee. In private, I invariably dissect out tonsils under full anæsthesia, and in children this operation can be completed in under ten minutes, with less bleeding, less shock, and none of the dramatic risks such as take place under the short anæsthetic that is required for guillotining. It is perhaps because the guillotine appears to be so simple an instrument, when in fact it is most difficult, that its use is taught in the medical schools. I do not think I am exaggerating if I say that it is necessary to do at least 100 operations with the guillotine before becoming an adept with it, and even the adept cannot invariably remove the lingual portions of the tonsils. These experimental cases may become rheumatic or deaf, and are no credit to the profession. On the other hand, with the full exposure and excellent illumination that can be obtained with a Boyle-Davis gag and head light, a house surgeon can be taught efficiently to dissect out the non-adherent tonsils of children in a very short time, whilst at the same time any faults he makes can be rectified before the child is away from the table.

As a clinical assistant, seeing and treating the old cases, one realises only too well how much damage one may have caused to a child's hearing by an incomplete tonsillectomy, especially if it was done primarily to cure an otitis media. It is to be hoped eventually some form of treatment may be discovered which will do away with the mutilating operation of tonsillectomy, but in the meantime I wish most emphatically to support Mr. McLaggan's plea.

I am, Sir, yours faithfully,
C. BERKELEY WAY, M.B., B.S. Lond.

Finchley-road, N.W., Dec. 29th, 1930.

THE TOXICITY OF VITAMIN D.

To the Editor of THE LANCET.

SIR,—Last year a boy 2 years old crippled with rickets was brought to my clinic. I prescribed *vigantol in three-drop doses to be taken in a teaspoonful* of hot milk thrice daily. The mother misunderstood both my and the pharmacist's directions and she administered to her baby a teaspoonful of vigantol three times on the day she consulted me. On the morrow the little patient was again in my clinic. He was œdematous from head to foot, and his urine contained a considerable amount of albumin. No other abnormality could be detected. Vigantol was stopped; a purge was administered; hydric diet, absolute rest, and warmth completed the therapeutic measures taken. On the third day the child was quite himself again and resumed the daily dose of nine drops for a period of *two months uninterruptedly* before he could get rid of his rickets.

I contribute this case to show how wide is the range of dosage in vitamin D therapy.

I am, Sir, yours faithfully,
DR. DJAMIL F. TU-TUNJI.

Trans-Jordania, Nov. 14th, 1930.

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—In any process or system designed to render milk safe for human consumption, it is essential that possible undesirable effects on the biochemical and nutritive properties should be accurately ascertained and considered. In the letter of Lord Dawson and his co-signatories, it is definitely stated that during pasteurisation the vitamin content remains intact. There is, however, an impressive weight of evidence that points to the conclusion that there is a notable loss of vitamin C and that the calcium salts are considerably affected. The bibliography on these points is so extensive and well known that specific references are unnecessary.

I am, Sir, yours faithfully,
JOHN CAMPBELL, Ph.D.

East Dulwich, S.E., Dec. 22nd, 1930.

PANEL AND CONTRACT PRACTICE

National Health Insurance in 1930.

THE past year was clouded by rumours of excessive sickness benefit claims, culminating in the report of the Government Actuary on the experience of a group of approved societies during the period 1921–27. The increase was shown in the report to be: (1) most pronounced in the claims of short duration; (2) due more to the larger proportion of persons claiming than to a longer average duration of claims; (3) more marked among women than men, and among married than unmarried women. These facts suggested directions in which remedies are to be sought. Two investigations were made by the Ministry of Health, the first being a scrutiny of the references to the regional staff in the year 1929, the other an investigation of a sample of insured persons in receipt of benefit at a given date in 1930. The results of the first were tabulated in Sir George Newman's annual report. The results of the second are in process of compilation. Certain of the larger approved societies were requested to refer for examination a fixed proportion of all their members who on a certain day (May 5th, 1930) were in receipt of sickness or disablement benefit. About 29,000 such references were received and reports from the practitioners in attendance were obtained. These were scrutinised and those clearly incapable were excluded. The remainder, about 13,500 in number, were summoned for clinical examination and report by the regional staff. New regulations are now in force whereby certificates are to be investigated and practitioners referred to panel committees to decide on the evidence of "want of reasonable care."

The National Formulary, or list of commonly used prescriptions similar to a local hospital pharmacopœia, issued at the end of 1929, has been adopted in most areas during 1930. It is generally regarded as useful and marking an advance on the local formularies which were formerly in use.

During the year additional benefits have not shown much development owing to want of adequate funds. *The most popular are the dental and ophthalmic* benefits, and to these have been allotted the most money. The waiting period which must elapse before an insured person becomes entitled to additional benefits, which prior to January, 1930, was about five years, has now been shortened to three. Unfortunately, these additional benefits, which are of great service to insured persons from the preventive point of view, are crippled by the depleted state of the sickness benefit funds.

The best hope for the new insurance year lies in a resuscitation of trade and increase of employment, resulting in such improvement in economic conditions as to lighten the present burdens. Energies might then be turned into more productive channels for the prevention of sickness and preservation of health.

Statutory Rules and Orders No. 781.

Towards the end of last year certain regulations came into force embodying agreements between the Ministry of Health and representatives of insurance practitioners. One of these gives effect to the arrangements whereby facts which appeared prima facie to indicate that insurance practitioners had issued certificates without the exercise of reasonable care might be brought to the notice of practitioners by regional medical officers; certain of these cases are then brought to the notice of panel committees, for that committee to satisfy itself that there had been lack of proper care before any disciplinary action on the part of the Minister. Hitherto, any question raised by an approved society as to the action of a practitioner with regard to any medical certificate which he is required to furnish to a member of that society has been referred to the medical service sub-committee (a committee of doctors and laymen) for investigation. Power is now given to the Minister to refer the question of the certificates given by a practitioner to a panel committee (a committee of doctors only) or a similar committee representing a larger area. Any reference to a panel committee must be accompanied by a written statement indicating the points on which an explanation is required. The panel committee has to furnish the practitioner with a copy of the statement and arrange for him to submit a reply and to appear before them; representatives of the Minister attend the hearing. The panel committee's report and recommendation are forwarded to the Minister, the practitioner being provided with a copy. Both the practitioner and the Minister have the right of appeal.

Another regulation provides a means of deciding whether the substance or article supplied by a chemist or an insurance practitioner to an insured person was a drug or an appliance forming part of medical benefit. The decision is left to the panel committee after considering any representations made to it by the pharmaceutical committee; if the practitioner appears before the committee, a similar opportunity must be given to a representative of the pharmaceutical committee and of the Minister. Where the substance or article ordered by the practitioner has been found not to be part of medical benefit, the amount of money representing the cost of the article is calculated in a prescribed manner, deducted from his remuneration, and any moneys so recovered paid into the chemists' fund or the practitioners' drugs account as the case may be.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lts. C. T. Hyatt to *Courageous*, and T. L. Cleave to *Penzance*.

TERRITORIAL ARMY.

M. E. D. Roberts (late Cadet Corpl., Marlborough Coll. Contgt., Jun. Div., O.T.C.) to be Lt.

Supernumerary for service with O.T.C.—S. Andrews (late Cadet Staff-Serjt., Queen's Univ. Belfast Contgt., Sen. Div., O.T.C.) to be Lt.

ROYAL AIR FORCE.

M. Pearson is granted a temporary commission as a Flight Lt.

Flight Lt. B. F. Haythornthwaite is promoted to the rank of Squadron Leader.

Flight Lt. V. V. Brown is transferred to the Reserve, Class D (ii).

Dental Branch.—Major L. Somerville-Woodiwis (Army Dental Corps) is granted a permanent commission as a Squadron Leader.

INDIAN MEDICAL SERVICE.

The undermentioned officers relinquish their temp. commns.: Capts. J. Sahai and R. U. Hingorani.

Appointments

FORSYTH, C. E. P., M.B., Ch.B. Aberd., D.P.H., has been appointed Hon. Asst. Physician, Royal Gwent Hospital, Newport, Mon.

HUNT, ELIZABETH, M.D. Liverp., Physician to the Skin Department, South London Hospital for Women.

Queen Charlotte's Maternity Hospital: NIXON, W. C. W., F.R.C.S. Eng., Senior Resident Medical Officer, STANSFIELD, F. R., M.B., B.S. Lond., F.R.C.S. Eng., Assistant Resident Medical Officer, STUART, M. S., M.R.C.S., L.R.C.P. Lond., and LENDRUM, C. E. L., M.R.C.S., L.R.C.P. Lond., Resident Anæsthetists.

Royal Northern Hospital: LOVE, R. J. McN., M.S. Lond., F.R.C.S. Eng., and BAILEY, H., F.R.C.S. Eng., Surgeons.

MEDICAL NEWS

University of Cambridge.

At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR M.B. AND B.CHIR.

Part I.: Surgery, Midwifery, and Gynæcology.—G. L. Alcock, P. T. Ashby, C. P. Bailey, J. S. Barker, W. D. Bell, F. K. Boston, L. V. O. Brown, W. D. Brown, H. S. Buckland, D. C. Carroll, C. L. Collins, J. G. Connell, E. J. Currant, A. Cursham, J. H. Cyriax, E. M. Dimock, D. Divine, A. Eckford, W. A. Fell, F. H. Finlaison, G. H. Gange, G. H. A. Graetz, G. N. Grose, C. A. Grove, G. D. Kersley, C. R. T. Lane, T. C. Larkworthy, D. L. Lewis, J. W. S. H. Lindahl, E. H. W. Lyle, D. G. Macdonald, D. B. McGavin, F. H. Morrell, W. M. Niblock, W. R. Parkes, M. G. L. Perkins, J. Petro, W. H. Poole, J. Richardson, M. A. Robertson, M. A. Rushton, W. W. Sargant, P. G. Scott, R. P. W. Shackleton, J. Sowerbutts, J. H. Spence, T. C. Stamp, J. W. Summerhayes, C. E. Taylor, A. R. Thomas, R. M. W. Turner, E. D. Ward, J. N. Warren, A. M. Weston, J. C. G. Whitelaw, F. J. Wright, and C. H. Wrigley.

Part II.: Physic, Pathology, and Pharmacology.—C. Arthur, H. B. Bagshaw, C. O. Barnes, J. H. Beilby, J. H. Conyers, R. M. S. Cross, E. M. Dimock, D. Divine, W. S. Dyson, A. B. Field, F. H. Finlaison, M. S. M. Fordham, E. D. Forster, G. E. Grove, J. H. Hall, C. J. K. Hamilton, J. O. Harrison, W. V. Howells, G. H. Jennings, J. J. Keevil, H. D. B. Kelly, W. A. Nicholson, G. L. Ormerod, P. H. L. Playfair, V. H. Riddell, N. H. L. Ridley, M. E. D. Roberts, M. A. Robertson, G. Roeyn-Jones, E. M. P. Smith, R. H. B. Snow, D. J. R. Steen, E. S. Stern, H. Taylor, B. C. Thompson, J. W. P. Thompson, W. R. Winterton, and F. J. Wright.

The election to the Downing professorship of medicine has been suspended until March 31st.

University of London.

At recent examinations the following candidates were successful:—

M.D.

Branch I: Medicine.—A. J. Amor, G. C. Babington, L. I. M Castleden, W. P. M. Davidson, C. P. Donnison, Margaret R Dunlop, Doris L. Durie, Horace Evans, *H. P. Himsworth A. B. Kettle, G. O. Mitchell, M. B. Mody, M. M. Posel, L. H. Savin, A. G. Watkins, Dorothy E. Wright, and Elsie B. Wright.

Branch IV: Midwifery and Diseases of Women.—Mary C. E Constantine, Victoria M. Crosse, Helen R. Goodman, Beatrice G Smith, Edith J. L. Smith, Jean S. Thomson.

Branch V: State Medicine.— Amelia M. Ison and E. H. R Smithard.

M.S.

Branch I: Surgery.—D. S. M. Barlow, *R. H. Boggon, M. A Paul, R. F. Phillips, and S. M. Power.

Branch IV.: Laryngology, Otology, and Rhinology.—*R. J Cann and W. A. Mill.

* University medal.

Ten lectures on Comparative Physiology will be give by Mr. G. P. Wells at University College, Gower-street W.C., at 5 P.M. on Fridays from Jan. 16th to March 20th Admission without ticket.

University of Sheffield.

At recent examinations the following candidates we successful:—

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—Margaret F. Coveney, A. W. R. Eardley, J. E. Edso and T. A. Hunt.

Part II.—C. England and A. Spencer.

Queen's University of Belfast.

On Dec. 20th the following degrees were conferred:—

M.D.—George Smyth.

M.B., B.Ch., B.A.O.—J. C. C. Crawford (second-class honou and scholarship), M. H. Adams, H. C. Armstrong, J. J. Be Marion E. Buchanan, H. J. Goldring, J. G. Lord, J. S. McCorma and T. H. L. Montgomery.

University of Edinburgh.

On Dec. 19th, the following degrees and diplomas we conferred:—

M.D.—§*R. D. Aitken, §*L. J. Davis, I. B. Ewart, †W. M Ford-Robertson, William Goldie, *Laura M. Ligertwood, §J. F Loots, D. P. MacIver, †Milan Sokolovitch, §Joseph Weinstei ‡J. H. H. Williams, and Morris Witkin.

M.B.—J. W. Bridgman, R. O. Cairns, J. G. Craven, §W. I de Faria, William Finlay, K. N. Flint, M. El Gazayerli, F. M Gordon, I. D. Grant (with honours), M. B. Griffith, J. R. Hop J. E. Ilbery, Edward Joffe, T. M. Khan, R. S. Kirk, Gerard Lan E. H. Langschmidt, Amelia N. Laws, Joseph Levin, B. P. Lubb D. M. Lyon, A. P. M'Ara, D. C. MacGilchrist, D. J. MacRa C. L. Maingay, H. C. Maingay, D. H. Malherbe, R. A. Mitche D. S. Napier, §W. G. Pennington, W. M. Phinney, C. M. Ros Nathan Shapiro, W. S. Shaw, Edith Simpson, Harris Stang David Stern, D. W. Taylor, Gertrude J. K. Turner, R. A Turner, I. D. C. Veitch, F. A. Viapree, C. B. Watson, and E. S Wyder.

D.P.H.—C. P. Beattie, M.A., M.B., Ch.B.

The Ellis Prize in Physiology was conferred on W. A. Bain.

* Commended for thesis. † Highly commended for thesi
‡ Awarded Gold Medal for thesis. § In absentia.

University of Liverpool.

Dr. R. Stopford Taylor has been appointed lecturer i dermatology in succession to the late Dr. R. W. Mackenna

University of Durham.

On Dec. 20th, 1930, the following degrees and diplomas were conferred:—

M.D., for Practitioners of 15 years' standing.—W. S. O'Loughlin.

M.B., B.S.—A. G. Craven, William Hinds, T. E. C. Hurley, Kathleen N. W. Kearney, Gwendoline M. Langham-Hobart, J. T. Mani, and W. D. M. Millar.

B.Hy. and D.P.H.—Anne Fairweather, J. C. Hall, and Edward Porteus.

University of St. Andrews.

Dr. David Lennox has been appointed reader in forensic medicine, Dr. W. L. Burgess reader in public health, Dr. G. H. S. Milln lecturer in radiology and electrical therapeutics, and Dr. James Ferguson a tutor in anæsthetics

Poplar Hospital for Accidents.

It is proposed to provide a new out-patients' department at a cost of £30,000. In 1929 there were 127,000 out-patients.

National Institute of Industrial Psychology.

Under the auspices of this institute three public lectures on Muscular Work and Fatigue will be given by Dr. G. P. Crowden at the London School of Economics, Houghton-street, Aldwych, W.C., at 6 P.M. on Wednesdays, Jan. 21st, 28th, and Feb. 4th. Admission without ticket.

Nordhoff-Jung Cancer Prize.

The Dr. Sophie A. Nordhoff-Jung cancer prize for the best work of recent years in the field of cancer research has been conferred on Dr. Alexis Carrel, of the Rockefeller Institute for Medical Research, New York, in recognition of services to surgery by his development of tissue cultivation and his application of this method to the solution of the problems of pathological growth. The commission which made the award was composed of Professors Borst, Döderlein, von Romberg, and Sauerbruch.

Royal Institute of Public Health.

This institute will hold its annual congress over Whitsuntide (May 19th to 24th) at Frankfurt, with visits to Homburg, Wiesbaden, Nauheim, Heidelberg, and Kreuznach, and tickets may now be had from the hon. secretaries at 37, Russell-square, London, W.C. 1. Arrangements for travel and accommodation, which are offered at reduced rates, are in the hands of Sir Henry Lunn, Ltd., Endsleigh-gardens, Euston, W.C. 1, to whom application should be made.

International Illumination Congress.

This congress holds its ninth meeting next September in Great Britain under the presidency of Mr. Clifford Paterson. The congress proper will meet from Sept. 2nd to 12th, while the technical committees of the International Commission on Illumination will have their sessions at Cambridge from the 13th to the 19th. The subjects of discussion are likely to include the illumination of factories, offices, private houses and museums, and laboratory technique. The honorary general secretary is Colonel C. H. S. Evans, the Illuminating Engineering Society, 32, Victoria-street, London, S.W. 1.

Medical Society of London.

The syllabus for the second half of the 158th session gives the subjects chosen for six alternate Monday evenings, beginning Jan. 12th, which is a pathological meeting. On Jan. 26th Dr. E. P. Cumberbatch will open a discussion on the medical and surgical uses of diathermy; on Feb. 9th Dr. I. W. Macgill a discussion on the choice of anæsthetic; on Feb. 23rd Mr. A. Dickson Wright a discussion on the treatment of indolent ulcers of the leg; on March 9th Lord Dawson a discussion on the treatment of pneumonia; on March 23rd Dr. H. A. Harris and Dr. H. H. Mills a discussion on growth in children, clinical, radiological, and histological. Three Lettsomian lectures will be given by Dr. J. W. McNee on Feb. 16th, 25th, and March 4th, his subject being the spleen, its structure, functions, and diseases. Sir John Rose Bradford, P.R.C.P., will deliver the annual oration on May 11th.

Birmingham Hospital Centre Scheme.

Sir Charles Grant Robertson, chairman of the Incorporated Birmingham Hospitals Centre, has issued a statement reviewing the work so far accomplished, and explaining various features of the scheme. The city's response to the appeal for money he describes as "splendid," £584,000 towards the £1,250,000 required having been given since April last. When, the chairman says, the project is completed as planned "Birmingham will have something which no other British city has got." As to the Medical School, which is an integral part of the scheme, it is explained that "three important professors of the Medical Faculty" went to the United States last month as guests of the Rockefeller Foundation to study the design and arrangements of the newest and most important medical schools, and that upon their return early in January this part of the scheme will be actively taken up.

Medical Society of Individual Psychology.

Dr. Alfred Adler, of Vienna, will give an address at a meeting of this society to be held at the rooms of the Medical Society of London, 11, Chandos-street, W., at 8.30 P.M. on Friday, Jan. 16th. Members of the medical profession will be admitted on presentation of their visiting cards.

Extension of Horsham Hospital.

Lady Leconfield recently opened a new children's ward containing ten beds. The cost, including the provision of sun rooms for both women's and children's wards, has been £8000.

New Wing of Spilsby Hospital.

Lord Ancaster recently opened a new wing at this hospital, which has been given by Mr. J. W. Ramsden, of Hareby House, Spilsby, in memory of his father.

Post-graduate Courses in Berlin.

International post-graduate courses will be held in Berlin in March and April, including instruction in pathology, radiology, and surgery. Further courses on thoracic surgery, urology, physical and dietetic treatment, and other subjects will take place in October. Particulars may be had from the information bureau of the Kaiserin Friedrich-Haus, Luisenplatz 2, Berlin, N.W. 6.

Hospital Sunday Fund.

At the annual meeting of this Fund it was reported that the past year's collection amounted to £80,090, a reduction of £5109, and that for the last four years there has been a falling off not only in the receipts but in the number of collections. Donations produced £11,373 (a heavy drop), and the late Mr. George Herring's estate yielded £28,808, a small increase. The working expenses amounted to 4·57 per cent.

Birmingham Dental Students' Society.

The annual dinner of this Society was held at the Queen's Hotel on Dec. 13th, 1930, with Mr. A. G. Clendinnen, the President, in the chair. The President of the Birmingham Dental Hospital proposed the toast of the Society, and the Dean of the Hospital, in replying, stated that he only hoped the Birmingham Dental School would be moved in the near future to the new hospital centre at Edgbaston.

Sweepstakes for Hospitals.

The Committee, which lately sent out a questionaire to test public opinion on the desirability of sweepstakes for hospitals (see THE LANCET, 1930, ii., 1215), reports that more than 90 per cent. of the replies are favourable. Sir Gordon Campbell, the Chairman of the committee, states that he will make no move in the matter unless sweepstakes are legalised in this country, for he deems it undesirable to manage them from abroad, as has been proposed.

Glasgow Eye Infirmary.

For the first time since this Institution was founded in 1824 a public appeal is being made for the extension of accommodation, which the President, Sir M. W. Montgomery, describes as "hopelessly inadequate." In 1929 there were nearly 2000 in-patients and 32,000 new out-patients. The extension, which will cost £25,000, will include two new wards, additional out-patient accommodation, two large lecture rooms, consulting rooms, a new pathological section, bedroom accommodation for nurses, and verandahs to the children's wards.

Donations and Bequests.

The late Mr. T. Percy Legg, C.M.G., F.R.C.S., of Harley-street, W., who left £65,388, with net personalty £62,957, bequeathed his surgical instruments and microscope, medical and surgical books, and £200 for prizes for surgery to King's College Hospital Medical School; £100 each to King's College Medical School Clubs and Societies Union and King's College Hospital; and on the death of the survivor of certain specified persons, £1000 each to Epsom College, the Royal Medical Benevolent Fund, the Medical Society of London, and the Royal College of Surgeons, London; and the ultimate residue as to one-third to King's College Hospital and two-thirds to King's College Hospital Medical School. But should the hospital and medical school after the date of his will have admitted or continue to admit women medical students, beyond those already admitted, or if the hospital and medical school shall be supported or maintained by the State, then the ultimate residue of his property is to go to such charitable institutions or objects in England as the executors in their absolute discretion may select.—The Dundee Royal Infirmary has received a cheque for £100,000 from the trustees of the late Mrs. Marryat.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Jan. 6th.—8 P.M., Tropical Diseases. Paper: Colonel S. L. Brug (Batavia): Filariasis in the Dutch East Indies.

Wednesday.—5 P.M., History of Medicine. 8.30 P.M., Surgery. Pathological Evening: Specimens: Mr. A. E. Roche: Innocent Polyp of the Iliac Colon in a Woman of 64. Mr. H. A. B. Whitelocke: Retroperitoneal Sarcoma. Mr. John Everidge: X Ray Photographs and Lantern Slides of Intravenous Pyelography. Sir Lenthal Cheatle: Microscopical Appearances of Interstitially Radiated Tissues. Mr. Cecil P. G. Wakeley: Sarcoma of the Jejunum. Sarcoma of the Kidney in a Child. Teratoma of the Kidney in a Child. Other specimens will also be shown.

Thursday.—8.30 P.M., Neurology. Papers: Dr. J. Purdon Martin: Chronic Subdural Hæmatoma. Dr. E. Arnold Carmichael: The Ætiology of Disseminated Sclerosis: Critical Observations on Recent Work, with especial reference to Spherula Insularis.

Friday.—8.30 P.M., Ophthalmology. Cases: Mr. Norman Fleming: Flap Extraction, With Cinematograph. Mr. R. Foster Moore: Bilateral Cataract from X Ray Exposure. Other cases will be shown.

HARVEIAN SOCIETY OF LONDON.

Thursday, Jan. 8th.—8.30 P.M. (at 11, Chandos-street, W.), Annual General Meeting.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Friday Jan. 9th.—8.30 P.M. (at the West London Hospital, Hammersmith), Discussion on Malignant Diseases of the Large Intestine. Opener: Mr. G. Gordon-Taylor.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

Friday, Jan. 9th.—8.45 P.M. (at the Miller General Hospital Greenwich-road, S.E.), Clinical Evening.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Monday, Jan. 5th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

Tuesday.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

Wednesday.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

Thursday.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

Friday.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

Friday, Jan. 9th.—4 P.M., Mr. Gill-Carey: Rhinological Aspects of Asthma.

ST. JOHN'S HOSPITAL, Morden-hill, Lewisham.

Monday, Jan. 5th.—4.30 P.M., Dr. John Gibbens: Diseases of Infancy and Childhood.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

Thursday, Jan. 8th.—9 P.M., Dr. E. Mapother: Alcoholism.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

Thursday, Jan. 8th.—5 P.M., Mr. R. C. Brown: Cause and Treatment of Delay in the First Stage.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

Tuesday, Jan. 6th.—5 P.M., Dr. J. E. M. Wigley: Erythema Multiforme.

Thursday.—5 P.M., Dr. I. Muende: Pathology Demonstration.

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Jun. Asst. Surgeon.

All Saints' Hospital, 91, Finchley-road, N.W.—H.S. At rate of £150.

Bangor, Carnarvonshire and Anglesey Infirmary.—H.S. £200.

Bath. Royal Mineral Water Hospital.—Surgeon.

Blackburn Royal Infirmary.—Res. H.P. £175.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.P. At rate of £120.

Bolton, Townleys Hospital, Farnworth.—Asst. M.O. £225.

Brighton, Royal Sussex County Hospital.—H.S. £150.

Brighton, Sanatorium and Infectious Disease Hospital.—Jun. Res. M.O. At rate of £150.

Bury St. Edmunds, West Suffolk General Hospital.—Jun. Res. M.O. £150.

Cambridge, Papworth Village Settlement.—H.P. At rate of £100.

Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. and Jun. H.S. £120 and £100 respectively.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. 1st Assts. for Out-patient's Dept.

Dunedin, New Zealand, Otago Hospital Board.—Radio-Therapeutist. £1000.

Ealing, King Edward Memorial Hospital.—Sen. H.S. Also Jun. H.S. £150.

Edinburgh, Elsie Inglis Memorial Maternity Hospital, Spring Gardens.—Jun. H.S.

Edinburgh Hospital for Women and Children, Whitehouse Loan.—H.P.

Exeter, Royal Devon and Exeter Hospital.—H.P. At rate of £150.

Finsbury Borough Council.—Asst. M.O.H. £750.

Golden Square Throat, Nose, and Ear Hosp., W.—Hon. Anæs.

Hampstead General and North West London Hospital, Out-Patient Dept., Bayham-street, Camden Town.—Cas. Surg. O. At rate of £100.

Harrogate Infirmary.—Jun. H.S. At rate of £125.

Harrow Hospital.—Radiologist. £100.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Asst. Surgeon.

Huddersfield Royal Infirmary.—H.S.'s. At rate of £150.

Hull Royal Infirmary, Sutton Branch.—H.P. At rate of £160.

Leeds Hospital for Women.—H.S. At rate of £50.

Leeds University.—Lecturer in Pathology, also Pathologist to St. James's Hospital. £750.

Leicester, City Isolation Hospital and Sanatorium, Groby-road.—Jun. Asst. M.O. £300.

Leicester, City Mental Hospital, Humberstone.—2nd Asst. M.O. £350.

Leigh Infirmary, Lancashire.—Res. H.S. At rate of £150.

Lewisham Metropolitan Borough.—Asst. M.O.H. and Sen. Maternity and Child Welfare Officer. £750.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Liverpool, David Lewis Northern Hospital.—Two Hon. M.O.'s for Ear, Nose, and Throat and Dermatological Departments.

Liverpool, Mill Road Infirmary.—Res. Asst. M.O. £200.

L.C.C.—Temporary Asst. M.O.'s. 30*s.* per session.

Maidstone, West Kent General Hospital.—H.S. £220.

Manchester, St. Mary's Hospitals, Whitworth-street and Whitworth Park.—Four H.S.'s. Each at rate of £50.

Mansfield, Notts, Harlow Woods, Orthopædic Hospital.—Res. Surg. O. £275.

Margate, Royal Sea Bathing Hospital, &c.—H.S. At rate of £200.

Middlesex C.C.—Dist. M.O. for Tottenham. £180. Also Public Vaccinator.

Northern Rhodesia.—Three M.O.'s. Each £600.

Nottingham Children's Hospital.—Res. H.S. At rate of £150.

Nottingham General Dispensary.—Res. Surgeon. £250.

Nottingham General Hospital.—H.S. At rate of £150. Also Sen. Cas. O. At rate of £200.

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.

Poplar Hospital for Accidents, East India Dock-road, E.—Sec Res. O. £175.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington, W.—H.S. At rate of £100.

Rotherham Hospital.—H.P. £180.

Royal Free Hospital, Gray's Inn-road, W.C.—Gynæcological Reg. £100.

Royal Northern Hospital, Holloway, N.—2nd H.P. At rate of £70.

St. Mary's Hospital for Women and Children, Plaistow, E.—Surgeon in Charge of X ray Dept. £100.

Sheffield, Jessop Hospital for Women.—Three Asst. H.S.'s. Each at rate of £100.

Sheffield Royal Infirmary.—H.P., H.S., Asst. Aural and Ophth. H.S. Also Asst. Cas. O. All at rate of £80.

Sheffield University and Royal Infirmary.—Asst. Pathologist and Demonstrator of Pathology. £500.

Southampton, Royal South Hants and Southampton Hospital.—Hon. Clin. Asst. Anæsthetist.

South India Missionary Hospital.—Medical Woman.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. Each at rate of £100.

Warrington Infirmary and Dispensary.—Sen. and Jun. H.S £225 and £175 respectively.

West End Hospital for Nervous Diseases, Gloucester Gate, Regent's Park, N.W.—Jun. H.P. At rate of £100.

Wolverhampton, Royal Hospital.—Cas. O. and Res. Anæsthetist. At rate of £125.

Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

York Dispensary.—Res. M.O. £175.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Havant (Hants).

Births, Marriages, and Deaths

BIRTHS.

Couchman.—On Dec. 21st, 1930, at Upton-on-Severn, the wife of Hugh J. Couchman, M.B., of a daughter.

Paul.—On Christmas Day, 1930, at Queen Alexandra Hospital, Cosham, the wife of D. H. Paul, M.D., of a daughter.

Price.—On Dec. 22nd, 1930, at "Lawnbank," Grove-road, Sutton, Surrey, to Dorothy Price, M.B., B.Ch., wife of V. R. Price—a son.

DEATHS.

Adams.—On Dec. 28th, 1930, at Balernock, Shandon, Dumbartonshire, James Alexander Adams, M.D., F.R.F.P.S.G., V.D., aged 73.

Hodgson.—On Dec. 19th, 1930, Amy Hodgson, M.D., M.R.C.P., D.P.H., aged 45 years.

Wilson.—On Dec. 23rd, 1930, suddenly, at Braeside, Bardsey, Yorks, Hector Maclean Wilson, M.D., late Chief Inspector W.R. of Yorks Rivers Board, aged 72.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

SOME LESSONS OF THE EPIDEMIC OF VENEREAL DISEASE

(1914–1924).

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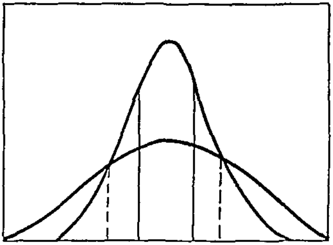
I WAS recently reviewing the report of the conference on ulcus molle, which took place at the Annual Meeting of Dermatologists at Strasbourg in 1928, and was impressed by the copious statistics presented by Dr. Dekeyser, secretary of the Belgian Dermatological Society.[1] The object of these figures was to show the relative frequency of soft sore, syphilis, and gonorrhœa. They were obtained from official sources in 16 European countries, from the United States, and from British Dominions. There are 36 tables in all. There are unavoidable blanks because several countries can give no information as to the incidence of the venereal diseases in the civil population. But there are numerous valuable reports from the military and naval services. Unfortunately, some of the belligerent States were unable to supply figures for the period of hostilities, but their records of the decline of the epidemic are useful to compare with other data.

It occurred to me that by constructing graphs representing these figures I might learn something as to the factors which influenced the diminution of venereal disease from 1920 to 1924. As I found, incidentally, that some of the details collected from so wide an area confirmed other observations, I venture to believe that the charts give a reasonably accurate presentation of the facts.

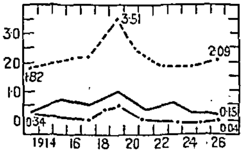
The authorities responsible for the therapeutic measures taken to combat venereal disease, and the *organisations which support them by propaganda, must* have been gratified by an annotation appearing in THE LANCET last April,[2] in which it was stated that "the gradual but steady decline of syphilis in European countries since the late war must be attributed to the intensive Government campaign against the disease." But three weeks later another annotation[3] candidly confesses that "the encouraging results mentioned in April are somewhat discounted by the story of the behaviour of syphilis in Helsingfors and all Finland." These remarks are based upon the report of Dr. Wilén. This authority, after an exhaustive study of the conditions obtaining in the area under his observation, says: "It would seem that salvarsan treatment is unable to counteract the periodic increase of the disease to the extent hoped for." Dr. Wilén supports the thesis of Buschke, Gumpert, and Langer, who, in 1927, expressed doubts about the modern treatment of syphilis being the chief factor in its periodic decline. These writers considered that the "incidence of venereal disease is mainly determined by economic and social factors, and that the explanation for the fluctuation in their frequency is to be found (or hidden) in the term 'genius epidemicus.'"

FIG. 1.



Two types of curve similar to that of the incidence of cases in certain epidemics (after Singer).

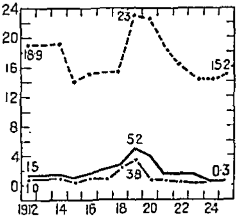
FIG. 2.



Sweden (civil population). Incidence of venereal diseases per 1000 inhabitants. In this and subsequent figures the three diseases are represented as follows:—

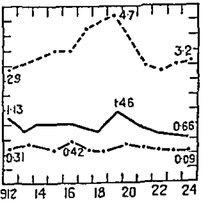
- - - - - - - - Acute gonorrhœa.
——————— Syphilis (primary and secondary).
—·—·— Soft chancre.

FIG. 3.



Sweden (army) per 1000 men.

FIG. 4.



Denmark (civil population) per 1000 inhabitants.

Fierlinger,[4] in the League of Nations Report, doubts whether there is a real decrease in the incidence of syphilis and "whether the treatment has the value claimed for it." There is no question as to *the decline from 1920 to 1924, as the following graphs* show, so that one must assume that Dr. Fierlinger was referring to reports of later declines. Dr. Dewar, at the Imperial Social Hygiene Congress,[5] while noting the steady fall in the incidence of syphilis from 1920 to about 1926, stated that "it is believed that for some unknown reason there has been an increase in the prevalence of this disease." Local increases have been recorded by French observers during 1926, and they have attributed them to the which explains certain types of epidemic. Neither, on similar grounds, can I see any evidence to indicate a "genius epidemicus" as suggested by the authors quoted above.

(3) That the variations in the reservoirs of infection in different areas and the relative immunity of the population concerned appear to have little influence on the epidemic status.

(4) That the transmission factor was the prime agent. It is difficult to say whether economic conditions played any part. It is evident that during the war years and immediately after there was an enormous outpouring of money, and this undoubtedly raised the spending power of the communities. It is also certain that, coincident with the decline in the incidence of the venereal diseases, there has been a fall in material prosperity.

(6) That it is inconceivable that the remarkable correspondence in the duration of the three curves of decline can be the result of treatment, which differs so completely both in principle and character in the three diseases. While earnestly supporting all efforts to bring the infected under treatment at the earliest possible date, and the employment of every means available to shorten the period of infectivity and to counteract the deleterious effects of these diseases, we must not claim too much. We must not delude ourselves with the idea that measures, however beneficial to the individual, can produce a world-wide decline in the incidence of three different types of disease. The rise and fall of epidemics depend upon much bigger factors, and so far as I am aware no epidemic disease has been removed by treatment, however intensive.

Finally, it would appear that in any future contingency of this type the efforts of the sanitarian must be concentrated upon the transmission factor. The value of such measures as the *cordon sanitaire*, the provision of prophylactics, and the immediate disinfection of suspected contacts, was evident in the comparatively few instances in which they were employed efficiently in the late war.

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3. Ibid., p. 1081.
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Makuyu, Kenya Colony.

ANÆSTHESIA IN MENTAL CASES.

THE necessity for paying due regard to the mental state of a patient before operation is rightly receiving more and more attention. As H. Kilan has written, "many patients squander their physical and psychic energies through anxiety over the operation and not from serious strain which the operation itself represents." And when we come to patients who are actually mentally unstable these considerations become paramount. The harm, even fatal harm, that can be done to persons of this kind by an administration that does not exterminate fear and that does promote excitement is undoubted, but is too often underestimated. Hysterical, neurotic, borderline, and actually insane persons belong to this group for whom the utmost care in choice and giving of anæsthetics is desirable, and S. J. Turel[1] strongly recommends colonic anæsthesia for them. There is no doubt that the method has exceptional advantages, for it can be used without causing the patient the slightest psychic disturbance, indeed, without his knowing that an anæsthetic is to be given or an operation performed. Turel's experience has been with colonic ether, and he makes only slight reference to avertin which is likely to be of increasing utility in the situations which he discusses. In practice the actually insane are generally found fairly easy to deal with. It is in the highly emotional and the psychoneurotic that so much care is needed if injury is to be avoided.

THE LATE DR. WILLIAM MACLEAN.

Dr. G. Lissant Cox sends the following pers note about Dr. William Maclean, medical officer of health for Ross and Cromarty, whose obituar notice appeared in our issue of Dec. 20th, 1930:—"Maclean was a remarkable man, and his death i deplored by all his friends. I met him first at th Loch Maree food poisoning (botulism) traged Many medical men were there; alone amongst them Maclean recognised symptoms corresponding to an outbreak of food poisoning described by Van Ermengem. This will give some indication of his ability, and the resources of his splendid library. But Maclean was not learned only in medicine. The classics, ancient and modern, archæology, field botany, and geology were part of the man himself. He was one of those rare persons who inspire not only complete confidence but an indefinable sense of charm. His Scotch humour was a pure joy, and sparkled the more there should be a solitary Englishman amongst many Scots. A first-rate fisherman, too, he was; whatever he touched he adorned. Scotland is indeed poorer by his death."

NEW PREPARATIONS.

EPINALIN (Burroughs Wellcome and Co., Snow Hill, London).—This solution of "Wellcome" Brand Adrenalin and "Wellcome" Brand Ephedrine Sulphate has been recently introduced for applicati to the pharynx and nose by means of an atomis Each cubic centimetre contains adrenalin 0·0001 (=1 in 10,000), and ephedrine sulphate 0·02 g. (= in 50). The powerful but relatively transient acti of adrenalin is followed by the prolonged action ephedrine, and the drug has been found valuable a nasal spray in asthma and hay-fever, in engorged co ditions to shrink the nasal mucosa, and to aid drain in sinus suppuration. Epinalin may also used, preparatory to rhinoscopy, as a swab to turbinates, or to tooth sockets, and also after ton lectomy. It is issued in bottles of 10 c.cm. a 25 c.cm.

SIONON (Bayer Products, Ltd., 19, St. Dunstan hill, London) is a carbohydrate (a gluco-hexite) the diabetic, the calorific value of which is said be practically equivalent to that of glucose, 100 of Sionon equalling 390 calories. It is a white odourl crystalline powder with a sweetish taste, and can used in the preparation of cooked foods without any way affecting its composition. When cooked exhibits a binding action similar to that of sug The account of the drug which is distributed wi the preparation sets out its action and mode of us and it is well to note that any suggestion is disclaim that Sionon can influence the cause of diabetes, as exercises no material effect on insulin formatio Nevertheless it has proved its utility in treatme to the satisfaction of some users. It is sold in ti of 500 g. The contents weigh about 2 lb., whic is more than 500 g., and the substance should administered in daily quantities of 30–80 g. (1–2½ oz. which should be taken at intervals, as otherwis it may be too relaxing.

THE address of the Central Council for Distric Nursing in London is now 12, Whitehall, S.W. (near the Admiralty Arch). Tel.: Gerrard 1610.

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[1] Psychiatric Quarterly, 1930, iv., 425.

ADDRESSES AND ORIGINAL ARTICLES

CŒLIAC DISEASE.*

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IN the year 1725 what was probably the first case of cœliac disease was shown to the Society for Children's Diseases in Jena, but the first description of the disorder was in a short paper by Samuel Gee in the year 1888 "On the Cœliac Affection." This paper, comprising but three pages in the St. Bartholomew's Hospital Reports, is a model of clinical observation and, as far as the description of the digestive and many of the general symptoms is concerned, very little has been added to it by later writers. Following on this communication a few cases were reported by R. A. Gibbons and by W. B. Cheadle (under the title of Acholia) and, in all probability, some of the cases of pancreatic infantilism described by Byrom Bramwell were examples of cœliac disease. The next important contribution was made by C. A. Herter in America in 1908, who in his monograph "Infantilism from Chronic Intestinal Infection" has been accused of rediscovering the disease. Within recent years the writings of G. F. Still, R. Miller, H. Lehndorff, and H. Mauntner have led to a wider recognition of the disorder. On the Continent of Europe the condition is frequently called Heubner-Herter disease, but there can be no doubt that if any one name is attached to this disease it should surely be that of Gee.

Clinical Features.

This disease which occurs in all grades of society is more common in girls than in boys, and has been observed in one of homologous twins. The disease has never been seen in a child at the breast. The onset is usually insidious during the age-period of nine months to two years. Associated as that age-period is with dietetic changes and teething it is not to be wondered at that the earliest digestive symptoms of the disorder are usually ascribed to such causes, and it is often only after the bowel disorder and failure to thrive has been present for some time that the correct diagnosis is made or even that medical advice is sought. In the early stages of the disease diagnosis is almost impossible; indeed it is often not made until the complete clinical picture has developed, and thus the cause of the illness frequently remains undiagnosed until the child is five or six years of age. Careful inquiry into the history of such cases will nevertheless often reveal the fact that digestive disturbances have been present for a long time, possibly for years. Occasionally the onset is apparently an abrupt one, and then a few days after the onset of an acute attack of diarrhœa and vomiting the stools are noticed to be large and pale. The characteristics of the fully developed case are: (1) the passage of large, pale, and offensive stools containing considerable amounts of fat; (2) wasting—and stunting of growth amounting to infantilism—chiefly due to absence of stored fat; (3) abdominal distension; (4) anorexia and certain other nervous symptoms; and perhaps (5) the presence of deficiency symptoms.

CHARACTER OF THE FÆCES.

The fæces furnish the key to the diagnosis of cœliac disease, and there is no better description of them than that contained in Gee's paper: "Signs of the disease are yielded by the fæces, being loose, not formed, but not watery; more bulky than the food taken would seem to account for; pale in colour as if devoid of bile; yeasty, frothy, an appearance probably due to fermentation; stinking, stench often very great. The hue is somewhile more yellow, otherwhile more drab." During the long drawn-out course of cœliac disease there are many ups and downs, and for periods the stool may be quite formed and even coloured but at other times the typical stools so aptly described by Gee are present, although under adequate treatment they are not so frequently seen as in the untreated case. Miller holds the view that certain cases are characterised throughout their whole course by the absence of diarrhœa and speaks of a non-diarrhœal type of cœliac disease, but it would appear that these types only indicate a difference in severity. In the diarrhœal periods more free fatty acid is present in the stool whereas soaps predominate in the more or less formed stools of the non-diarrhœal periods.

The number of stools passed each day varies thus: in the non-diarrhœal phases there may be one or two a day, whereas in the diarrhœal phases two to three is a very common number, although sometimes there may be five or six. The stool is large and when loose contains a high percentage of water, a point which continental writers think of very great importance. Some of the marked vagaries of the patient's weight chart may depend upon the weight of the stools since the total weight of stool passed in 24 hours may be one pound. Not only is there excess of water but on ordinary diet there is always, even in the non-diarrhœal periods, a considerably greater amount of solid matter than in a normal stool and of this a large proportion is fat. Fat should not form more than 25 per cent. of the dried fæces of a child taking an ordinary mixed diet, but in cœliac disease it usually forms from 40 to 60 and may even reach 80 per cent. The estimation of the percentage composition of the fæces is of the greatest importance in arriving at a diagnosis of cœliac disease, but it must always be correlated with the weight of the dried fæces since in all diarrhœal conditions the stool contains more fat than normal. A diagnosis of cœliac disease should not be made if the stool does not contain more than 2 g. of fat per day, but the amount of fat passed daily is usually very much greater than this and may reach 20 g. or even more. It is also advisable to estimate the amount of fat passed over a period of three to five days. In spite of this large proportion of fat in the stool the absorption of fat is often—particularly in the non-diarrhœal periods—surprisingly high. For instance in a child whose dried fæces showed 42·1 per cent. of fat, 83·5 per cent. of the total fat intake was absorbed. The significance of this may perhaps be better understood when it is remembered that the normal child absorbs about 95 and children suffering from biliary atresia an average of 30 per cent. of their fat intake. Further within certain limits an increase in the fat intake produces an increase in fat absorption. This occurs when one case is compared with another and also in the same case, and is probably one of the reasons why occasionally children suffering from cœliac disease have done well on cod-liver oil. Nevertheless a high or even a normal fat intake usually cannot be maintained for any length of time because an increase in the number, size, and offensiveness of the stools results.

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* An address delivered before the Ulster Medical Society on Nov. 13th, 1930.

In spite of this steatorrhœa the fat in the stools is well split, and the neutral fat does not form more than 25 per cent. of the total fat, and as a result of the great loss of fat in the stools there is marked demineralisation and in particular a considerable loss of calcium and phosphorus. Nitrogen absorption, on the other hand, by balance experiments appears to be normal.

The frothy appearance of the stool to which Gee refers is probably due to fermentation of carbohydrates.

WASTING.

Wasting, which becomes obvious as the disease develops and often reaches an extreme degree, is largely due to the absence of subcutaneous fat and is particularly noticeable in the gluteal and adductor regions. For some unknown reason the face often remains plump and rounded, and frequently there is quite a degree of colour in the cheeks so that almost a characteristic facies develops. If the child is clothed when first seen the degree of wasting revealed by undressing is indeed astounding, for these children "strip" badly. The wasting of the limbs contrasts markedly with the face as also does the distended abdomen with the atrophied buttocks. Indeed so striking is the latter that Miller has referred to it as the "gluteal sign."

The degree of wasting may perhaps be realised when it is stated that a child of 2 years old may weigh from 14 to 16 lb. instead of a normal 28 lb. The progress of the case shows a weight chart with many ups and downs, the variations being due to some extent to the presence or absence of large amounts of fæcal material in the bowel or to varying degrees of water in the tissues (hydrolability), and thus the net result of many weeks of treatment may only be represented by gain in weight of one or two pounds. The importance of wasting as a symptom may perhaps be emphasised by another quotation from Gee, "To diarrhœa alba add emaciation and cachexia and we have a complete picture of the disease."

Associated with the wasting is a marked degree of muscular hypotonia and a diminution of the rate of growth and physical development, with the result that as the child becomes older it is seen to be stunted, and a child of 9 may appear to be four or five years younger than its actual age. Unless appropriate treatment is instituted, this infantilism becomes more and more marked as the child grows older. The most extreme case in my experience was a girl whose height when 17 years old was no greater than a normal child of 4 years of age, and who had such extreme delay in dentition that none of her permanent teeth had erupted. As a rule dentition is delayed, but not to this extreme degree, and in some cases the enamel is badly formed.

Abdominal distension is another very obvious and characteristic symptom. It is rendered the more striking by the wasting of the gluteal region, and its presence leads frequently to the mistaken diagnosis of tuberculous peritonitis. The distension varies somewhat in degree depending on the state and contents of the bowels, for it has been demonstrated by radiographic examination that this symptom is due to flatulent distension of the intestine, particularly the colon. Hypotonia of the abdominal wall is also a factor in the distension.

NERVOUS SYMPTOMS.

Anorexia may reach an extreme degree, but fortunately on the other hand some of these children will suffer the infliction of protein skimmed milk as their sole dietary for long periods. The appetite is, however, always markedly capricious at some periods of the illness.

The behaviour characteristics of these patients are most interesting. Their intelligence is normal although the education of the older children naturally has suffered; the latter often appear to be rather precocious chiefly because their infantilism causes them to be treated as much younger than their actual age. In their periods of improvement the subjects of cœliac disease are most attractive, although perhaps more easily moved to tears than a normal child and usually somewhat spoilt, but in the diarrhœal period they are irritable and passionate and are as moody and capricious as their appetites; nothing pleases them, and their misery reaches a degree which makes them a trial to those who have charge of them and would lead one to suppose that it could not be the same child which was previously such a fascinating person. "When they are good they are very, very good, but when they are bad they are horrid."

There are not any definite signs of organic nervous disease. Sometimes the limbs are tender—a symptom to which Gee referred to as muscular tenderness—and this has been said to be due to peripheral neuritis. Such a diagnosis receives some support from the fact that the knee-jerks may be absent, but the probability is that the tenderness is due to scurvy.

A degree of anæmia of the secondary type, probably nutritional in origin, is usually present, and severe anæmia resembling that seen in sprue has been described in one or two cases.

DEFICIENCY SYMPTOMS.

A series of symptoms which are probably the result of vitamin deficiency may now be considered. Scurvy occurs in mild degree, being the result of the restricted dietary. Œdema is not infrequent, and occasionally free fluid can be demonstrated in the abdominal cavity, which adds yet another difficulty to the differentiation of cœliac disease from tuberculous peritonitis. This œdema is very similar to the nutritional or hunger œdema seen in marasmic infants, and it has been suggested that it is an infantile manifestation of beri-beri and due to absence of vitamin B. Recovery from this symptom may occur after adding ripe bananas which are rich in vitamin B to the diet.

It has been suggested that the stunting of growth is itself a "deficiency" symptom and due to deficiency of vitamin A or of a combination of vitamins. The liability to infections, particularly coryzas and the occurrence of parenteral infective diarrhœa, is more probably due to absence of vitamin A, but it is curious that what is usually regarded as the specific lesion of vitamin-A deficiency—xerophthalmia—is rarely seen, although cases have been reported by B. Schick.

The most interesting group of symptoms which call for discussion under this head are those concerned with the bones. Rickets occurs at two definite periods in cœliac disease—namely, in infancy and in the later years of childhood. It may occur at the ordinary age-incidence of rickets—i.e., 6 to 18 months—may heal and then reappear at from 5 to 7 years and reach an extreme degree. I have not observed this sequence in the same case although it has been reported by Lehman, but I have seen rickets at these two age-periods in different cases. The early rickets differs in no way from ordinary infantile rickets except that the cod-liver oil can rarely be used as a curative agent. The rickets, however, may heal as a result of the presence of cœliac disease, for this produces a partial starvation and arrest of growth, conditions which cure experimental rickets in rats. The bone itself is atrophic and fragile, in fact shows an osteoporosis, and gives a radiogram which to anyone who is familiar with the picture would itself suggest that the underlying condition was cœliac disease. Tracing chronologically then the order of events we may see: first, in infancy an osteoporotic bone with rickets; secondly, as the cœliac disease asserts itself more strongly, and stops growth, a stage occurs in which there is a fragile osteoporotic bone but no rickets, and if the cœliac disease has been present for two or three years there are frequently transverse lines in the metaphysis which indicate periods of complete arrest of growth; thirdly, at the age of 5 to 7 when growth is more rapid the bone is still osteoporotic and fragile, but rickets asserts itself again. As mentioned above, it is only rarely that all these stages are seen in the same child, usually the second and third stage only are seen; moreover, the occurrence of the third stage in any case indicates that treatment has been faulty.

The proof that these later bone changes are rachitic is based on (*a*) radiographic appearance, (*b*) blood chemistry, and (*c*) the results of treatment. The radiographic appearances are those of rickets, the blood shows low values for calcium and phosphorus, and treatment by ultra-violet irradiation or non-fatty preparations of vitamin D—e.g., irradiated ergosterol in solid form, cures the rickets and produces a normal blood chemistry. The underlying cause of the bone changes is deficient absorption of calcium and phosphorus, the result of non-absorption of fats and the fat-soluble vitamin D. Such a deficiency in fat-soluble vitamin D is obviously not improved by giving a "fat free" diet.

The activating cause of the rickets is, however, growth; as long as growth does not occur the child is able to supply sufficient calcium and phosphorus to calcify the rarefied bone, but when growth occurs and new bone has to be formed rapidly normal calcification becomes impossible. The usual manifestations of rickets are genu valgum and some enlargement of the epiphyses of the wrist, but the most intense degree of rickets may occur, so that the child shows multiple deformities, rosary, enlarged epiphyses, natiform skull, and multiple fractures of the long bones, and becomes quite unable to stand or walk.

The occurrence of late rickets in cœliac disease has been denied by W. McKim Marriott and others, but in Birmingham it is not infrequently seen. Further, the realisation of the possibility of its development during the rigid dieting which forms such an essential part in the treatment of cœliac disease is of the greatest importance, since appropriate preventive measures can then be instituted.

Another deficiency symptom that occurs from time to time in cœliac disease and which also depends on the presence of low blood calcium is manifest tetany. Donald Hunter has described a case of osteopathic steatorrhœa with tetany and dwarfism in a woman of 34 years of age who had intestinal symptoms and tetany from childhood, and which appears to be an example of cœliac disease persisting in adult life. This patient showed collections of opacities in the lens similar to those seen in post-operative tetany. Slit-lamp examination of several children with cœliac disease has, however, not revealed any opacities of the lens.

It is curious that whereas rickets is comparatively frequent in cœliac disease yet xerophthalmia is so rarely met with, and there is no adequate explanation of why these children can stand deficiency in vitamin A so much better than deficient absorption of vitamin D.

Prognosis.

Cœliac disease runs a long drawn-out course marked by many ups and downs. Even without any treatment it is possible for the patient to survive as a stunted feeble individual, since improvement usually occurs at puberty. Not infrequently, however, the child succumbs before that period from some intercurrent infection, although death from uncomplicated cœliac disease is relatively rare. Moreover, in spite of careful treatment, progress towards recovery is slow and intermittent and diarrhœa occurs from time to time, possibly from irregularities and premature changes in the diet, or from parenteral infections, but if treatment is carried out efficiently a cure can usually be promised. The length of time required to effect a cure varies in different individuals, even although the disease may appear to be of similar severity when treatment is started. In many cases in which recovery appears to have taken place the stools show rather more fat than the normal, whereas in others a complete clinical and "biochemical" recovery occurs. In some instances after puberty is established both "biochemical" and clinical recovery rapidly occur.

Increase in weight and height are good tests of the improvement of a case, but any definite retardation of growth always leaves its mark, and, although after recovery growth may be considerable, the child never reaches normal height. Fat is deposited in the subcutaneous tissues, and in some children for a few years after cure is complete the distribution of fat is very like that seen in mild examples of Fröhlich's syndrome, and the weight for height proportion is greater than in the normal child. The disease rarely persists into adult life, but the case reported by Hunter, and to which I have already referred, appears to be beyond criticism.

In arriving at the present-day conception of cœliac disease there have been four important landmarks. First, the stress laid by Gee on the intestinal symptoms—the diarrhœa alba; secondly, the insistence by Herter on infantilism as an outstanding symptom; thirdly, the success of a protein dietary in treatment; fourthly, the recognition of the presence of many symptoms of a deficiency disorder—e.g., tetany, scurvy, rickets, œdema.

Morbid Anatomy and Causation.

There is no known morbid anatomy of the disease and its cause is quite unknown. Post-mortem examinations are somewhat rare, and any abnormal appearances that have been observed in the course of such examinations are either due to secondary infections or to the result of malnutrition. There is no evidence of enteritis, a fact which disposes both of the theory that the disease is allied to sprue, as first suggested by Gee, and also of the view that it is a special form of chronic enteritis.

In chronic enteritis the stools do not have the characteristics of cœliac disease, and although there is an increased loss of fat in diarrhœa this loss is not so great as in cœliac disease in which, as a matter of but administration of carotene, a body closely related to vitamin A, is well worth a trial.

As to other forms of treatment rest in bed is of great importance in the early stages of the disease, and at any time if the disease is severe or if rickets is present. Care should be taken to prevent parenteral infections, and if the diarrhœa is severe periodic blood transfusions are of the greatest value and may prove the turning-point in a severe case. Gentle massage to the limbs is helpful, particularly during the period of confinement to bed. For the secondary anæmia liver extract may be tried, but the drug most likely to prove helpful is ferrum redactum in one-grain doses which, incidentally, is chiefly of value because of the copper present in it as an impurity. Other drugs are of little or no value in cœliac disease, and the administration of pancreatic extracts is based on an incorrect conception of the disease.

The treatment of cœliac disease is very tedious and often anxious, yet withal fascinating, because, by perseverance along the lines suggested, a complete invalid can be transformed into a useful member of child society, and at times even the bed-ridden can be made to "take up his bed and walk." Such success can, however, never be obtained without intelligent coöperation on the part of the parents and the expenditure of much care, thought, and anxiety on the part of both doctor and parents.

The original investigations to which reference has been made in this address have been carried out jointly with my colleagues, Dr. A. V. Neale and Dr. E. M. Hickmans, to whom, as well as the Medical Research Council, who have defrayed the expenses incurred, I am greatly indebted.

SOME CLINICAL CONDITIONS ASSOCIATED WITH ACHLORHYDRIA.*

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The association of achlorhydria with pernicious anæmia and subacute combined degeneration of the spinal cord is well recognised, but its presence in other conditions is not so widely appreciated. In infectious diseases its occurrence has been observed by many workers. Thus Van den Velden and Thaysen and Wegge noted it in typhoid fever; Frankl and Plaschkes found 25 per cent. with achlorhydria and 50 per cent. with hypochlorhydria after typhus, whilst of paratyphoid cases 50 per cent. had achlorhydria and 35 per cent. hypochlorhydria. Torning has seen achylia gastrica in 6 per cent. and hypo-acidity in 9 per cent. of 150 pulmonary tuberculous patients, whilst Permin showed that achlorhydria became more common as the disease progressed and was present in 75 per cent. of the advanced cases; similar observations have been made by Faber (1905) and by Faber and Lange and others. In malarial patients 26 per cent. have been shown to have an achlorhydria that frequently persisted throughout life (Guido). Achylia gastrica was also commonly found by Bloch after acute infections, such as influenza, pneumonia, and enteritis. The occurrence of achlorhydria or achylia gastrica after a variety of toxic or irritant factors has been discussed by workers in this country, notably Hurst, and in other countries by Faber and Lange, Faber (1920), Martius, Weinberg, Martinez, and many others.

Whether achlorhydria is congenital or acquired is a matter still in dispute. Martius noticed that a large proportion of young children had reduced gastric acidity, and considered this as evidence for a congenital occurrence. Jacobsen, however, found that many children with gastric symptoms did not show any pronounced tendency to achlorhydria, although it did occur amongst those with acute intestinal affections. Treatment and examination after recovery showed that some recovered normal gastric function while others did not. Similar results were obtained by Hertz, Chievitz, and Klementsohn. From an examination of normal infants, Marriott and Davidson, Babbott and others, and Davison, amongst others, found that gastric samples withdrawn at the height of digestion usually showed values of pH 3·0–pH 5·0, few cases falling below pH 3·0, but there was an increased acid-production with increased age. Since the healthy adult's gastric juice is approximately pH 1·2–1·4 (60–40 units of n/10 alkali), it will be seen to be of the order of a hundredfold to thousandsfold more acidic than was found in these normal infants.

It is possible that the gastric juice of such infants is not fully developed until later. This would be in harmony with the suggestion of Bauer that the persistence of the infantile glandular state means the under-development of the acid-secreting elements. The ease with which the gastric juice is influenced in infants by slight malaise or disease makes it difficult to interpret such results, as suggested by Faber.

Martius considered that chronic achylia gastrica was due to a congenital constitutional abnormality and was not secondary to a gastric atrophy, as put forward by Einhorn (1892). Faber (1920), however, thinks that it is due to a chronic gastritis of exogenous cause; whilst Schmidt believes that anomalies of innervation of the stomach will explain the dysfunction. Albu has explained it on the grounds of a congenital functional debility of the mucosa, but Disqué suggests a neurogenic factor leading to a functional depression of the mucosa.

It has been observed by several workers that the frequency of achlorhydria or hypo-acidity increases with age, and a variety of causes have been suggested—e.g., toxins, irritants, senile atrophy, and gross abuse of the stomach, as by insufficient mastication of the food, alcohol, &c. In this connexion, Seidélin found that 40 per cent. of working-class patients over 50 years of age and 67 per cent. over 67 years of age had absent or diminished secretion, whilst Dedichen observed anacidity in 66 per cent. of 99 healthy old people of 67 to 92 years of age. Keefer and Bloomfield, Faber (1927), and Gilford, have made similar observations whilst, on the other hand, Bell considers that hyperchlorhydria is also more common over 40 years of age. Vogelius found that cases of alcoholic gastritis with free acid in the gastric secretion showed achylia a few years later. Over 50 per cent. of these cases had gastritis, and improved in the early stages with treatment and abstinence from alcohol.

More recently, attention has been redirected by Langdon Brown to the importance of this association of achlorhydria with a variety of diseases. While Hurst (1929) has made similar observations and regards it as an ætiological factor in gastric carcinoma, Ley has observed achylia in patients over periods of many years and not noticed the development of cancer.

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Again, asthmatic patients frequently show a diminished or absent hydrochloric acid secretion, as recently emphasised by Bray, whilst the treatment of hay-fever with nitro-hydrochloric acid has been tried by Beckman for some years.

During the past two years we have been investigating certain types of cases in which the clinical condition has suggested an impairment of the gastric secretion. We have examined 100 cases by means of the fractional test-meal and have found a surprisingly large percentage with achylia gastrica or hypo-acidity. These may be considered conveniently in the following five groups:—

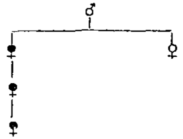
Gastrogenous Diarrhœa.

Group 1.—It has been known for a long time that a certain type of diarrhœa appears to bear some relationship to a deficient gastric acidity. This is the "gastrogenous diarrhœa" originally described by Einhorn (1898). Udaondo has cited a case in which a parent and two children, suffering from chronic diarrhœa, had achylia. More recently, Martinez has reported that he has seen two families with chronic diarrhœa associated with very marked nervous symptoms. In the first, a mother and four children had chronic diarrhœa and gastro-intestinal disturbances associated with achlorhydria, while five out of the 13 grandchildren also had achlorhydria. In the second family a mother and three daughters had chronic gastro-intestinal disturbances, together with achlorhydria. In both families there was an associated hysterical and very nervous temperament.

Studying 50 cases of mucous colitis, Bockus, Bank, and Wilkinson found 11 with hypo-acidity and two with achlorhydria; 32 of these cases were females. In a review of 425 consecutive cases of fractional gastric analysis Bell found 11 cases of chronic colitis (two with hypochlorhydria but none with achlorhydria) and 4 cases of diarrhœa (one with achlorhydria only). A similar statistical survey of 912 cases of an acidity or hypo-acidity by Hartman and Sager disclosed very few cases of chronic diarrhœa; there were 49 cases of achlorhydria without any symptoms or other diagnosis, whilst 245 were classed as functional nervous disease and presumably would include some cases of gastrogenous diarrhœa. Recently, Spriggs has reported that in 111 cases of functional disorders of the colon the gastric juice was super-acid in 41 per cent., sub-acid in 23 per cent., achlorhydric in 2 per cent. It is, of course, well known that colitis and progressive gastric hypo-acidity occur in sprue, while one of us (J. F. W.) has recently seen chronic diarrhœa and achylia in a pellagrin.

We ourselves have observed the remarkable regularity with which a persistent or recurrent diarrhœa existing over long periods has been associated with a deficient gastric secretion. This type of gastrogenous diarrhœa often appears to benefit by the exhibition of small doses (♏ v.–xv.) of hydrochloric acid (cf. Hurst (1929), Hunter, and Kantor and Sagal). Of greater importance, however, is the fact that there appears to be a very definite clinical picture associated with this "gastrogenous" diarrhœa, so much so that but rarely have we found the results of a fractional test-meal to be at variance with what we had suspected at the bedside. The recognition of this achlorhydric syndrome is of great practical importance as, in many instances, the simple remedy of giving adequate doses of dilute hydrochloric acid (♏ xxx.–lx.) leads to very striking therapeutic results.

In our first group of 53 cases the symptoms are mainly gastro-intestinal, the patient complaining of colicky pains, flatulence, and diarrhœa. This last symptom varies considerably in its severity; it may be intermittent and is sometimes only disclosed by questioning the patient. It is rarely sufficient to incapacitate, although occasionally there may be a history of blood or mucus in the stools. The history is usually a long one (3–20 years), while not infrequently a family history of looseness of the bowels may be obtained. One family in our series is worthy of especial mention in this respect. A man, invalided from the army in 1857 for persistent diarrhœa, his two daughters, a granddaughter, and a great-granddaughter all suffered from this condition. We were able to examine three members of the family, representing three generations, and in all of them we found achlorhydria.



○ = Chronic diarrhœa, gastric analysis not made.
● = Achylia associated with chronic diarrhœa.

Apart from the gastro-intestinal symptoms, these patients may complain of a lack of vitality and depression, and, as they are often highly neurotic, a diagnosis of nervous dyspepsia may be made. In some of the cases an intermittent soreness of the tongue may be complained of, and this may be a valuable guide in establishing the diagnosis.

The physical signs are few. There may be a slight secondary anæmia, and on abdominal examination the liver may be slightly enlarged, while tenderness can be elicited by deep palpation over the descending colon, and succussion sounds are common. The following is typical of the cases we are describing:—

A clerk, aged 36, consulted us complaining of an indigestion of many years' standing. He suffered from colicky pains across the abdomen and extreme flatulence, and gave a history of intermittent diarrhœa. During the war he was gassed and the diarrhœa was very severe; it has recurred from time to time since then. For two months before he was examined the diarrhœa had ceased, but the motions were irregular, the bowels usually being opened twice a day. There had never been any blood or mucus in the stool. He said that he was always tired, did not feel fit for his work, and that his ankles swelled at night. On questioning, he said that he had had occasional ulceration of his mouth during the past ten years.

On examination, he was pasty and unhealthy looking, the abdominal wall was flabby, and there was much splashing and gurgling on palpation. The liver could be felt about one inch from the costal margin. There were no other physical signs to be made out, and the only positive result obtained from clinical investigations was the gastric analysis, which showed complete achlorhydria.

He was given ♏ xxx. of acid. hydrochlor. dil. (B.P.) and pepsin, three times a day after meals, and immediately improved. A year later he reported himself to be very well; he had gained 1½ st. in weight and no longer suffered from gastro-intestinal symptoms.

Although in the majority of cases there is no danger to life, occasionally the achlorhydria may be associated with a much more serious condition and is probably the precursor of it. In one case, which has already been recorded (Susman and Oliver), an acute yellow atrophy of the liver followed the intense enteritis that had developed. In another case diabetes developed in a patient who gave a long history of gastro-intestinal symptoms associated with diarrhœa; in another the patient developed exophthalmic goitre.

It should be remembered that occasionally one meets a case presenting the typical clinical picture of the "achlorhydric syndrome" in which a gastric test-meal discloses a hyperacidic condition rather than the anticipated hypo-acidity. Libert mentions the possibility of hyperacidity in this connexion. We have found one in a series of 53 cases examined. The treatment of such a case with hydrochloric acid is contra-indicated, since alkalis usually relieve the condition, and it is, therefore, a sine qua non that the diagnosis of an "achlorhydric syndrome" necessitates a gastric investigation. We have also noted the frequent history of an operative interference for appendicitis or gastric ulcer in cases subsequently shown to have the typical achlorhydric syndrome on presenting themselves with recurrences of the original symptoms. A similar observation has been made by Levine and Ladd in six of 125 cases of pernicious anæmia. The possibility of abnormal radiographic results in gastric achylia should also be borne in mind (Hines).

Table I. summarises the findings in our series of 53 cases in which gastro-intestinal symptoms were the predominant feature.

TABLE I.

	Male.	Female.	Total.
Achylia gastrica	5	20	25
Hypochlorhydria—			
(*a*) Peptic activity negligible	2	6	8
(*b*) Peptic activity normal	5	5	10
Normal hydrochloric acid—			
(*a*) Peptic activity diminished	0	1	1
(*b*) Peptic activity normal	0	8	8
Hyperchlorhydria	0	1	1
	12	41	53

All the cases were examined by means of a fractional test-meal and the titres for free hydrochloric acid, total acidity, total chlorides, and peptic activity were determined for each sample. The 25 cases with achlorhydria also showed either complete or almost complete absence of peptic activity in all samples —i.e., achylia gastrica. This was confirmed in several cases which were re-examined after varying intervals. The remainder of the cases fell into very definite groups, as shown in Table I.; the highest value obtained in the hypochlorhydric group being 16 units (0·058 per cent.) of hydrochloric acid, while the lowest of the maximum titres in the normal group was 28 units (0·102 per cent.). One case showed hyperchlorhydria (over 70 units of free acid).

TREATMENT.

In the treatment of chronic diarrhœa a great variety of drugs have been tried. The gastric secretory deficiency suggests the use of hydrochloric acid, and small doses (♏ v.–xv.) have been tried by many authors, notably Hunter, Kantor and Sagal, Schneyer, and Martinez. The question of an adequate dose is important. It was shown, as long ago as 1908, by Fischer and by Leo that there was a minimum dose of dilute hydrochloric acid (2·75 c.cm. of 10 per cent. acid) that would produce free acid in the gastric contents, while greater doses (13 c.cm.) often failed to produce free acid. Crohn showed that small single doses of hydrochloric acid, U.S.P. dil. (11·5 per cent.), were neutralised when given to achlorhydric patients and that at least 1·6 to 2·6 c.cm. were required to render the gastric contents acid. Similar observations have been made by Vanderhoof, Hurst, Shaw, and by Kearn, Rose, and Austin, who advocate 4·8 c.cm. of the diluted acid.

As will be seen from our results of gastric investigations above, there is usually a deficiency in pepsin in the gastric juices of achlorhydric patients, and it has been observed by Wilkinson and Brockbank that in cases of pernicious anæmia with gastro-intestinal symptoms these latter are relieved by the use of pepsin together with the acid. We have, therefore, been using this mixture containing acid. hydrochlor. dil. (B.P.), ½–1 drachm, and glycerinum pepsini, 1–1½ drachms, well diluted with water three or four times a day with meals. In all cases, the gastric symptoms due to the achlorhydria have been cured as long as the treatment was continued.

RESULTS AND TREATMENT.

The 43 cases in this group with achylia or hypochlorhydria, and the normal case with diminished peptic activity, were given the above treatment.

(1) Twenty-eight have received treatment for periods of six months to two years and show the following results. Seventeen of the 18 cases with achylia were promptly relieved by the treatment; 16 of them are very well and have been free from gastro-intestinal symptoms (although one occasionally passes some mucus); one improved for eight months, when she developed a subacute atrophy of the liver (Susman and Oliver). The other has improved and is better than before treatment. One case discontinued the acid therapy and relapsed, but is now well again after returning to the treatment.

Of the 10 cases of hypo-acidity, seven are quite well; one still passes some mucus, but is quite well otherwise; and one has very occasional attacks of diarrhœa, which is more marked if she discontinues the acid therapy; one is not improved.

The one case with normal acid secretion but reduced peptic activity has been perfectly well since she commenced this treatment.

The remainder of the cases (eight with normal acidities and one with hyperacidity) were not given the pepsin and hydrochloric acid treatment; of these two are better, two are improved but get occasional attacks of diarrhœa; two are still getting colicky pains; one is slightly better; and two are no better.

(2) The remaining 15 cases (seven with achlorhydria and eight with hypo-acidity) have only received treatment for periods of less than three months and the results have therefore not been included in the above figures. All, however, are showing a satisfactory response at the present time.

Sore Tongues.

Group 2.—In the course of our investigation we very early observed that, while most of our cases complained of such gastro-intestinal disturbances as have already been described, a few gave histories of recurrent sore tongues or of ulcers on the lips and gums. This led us to extend the scope of our work, and we have been able to collect a further group of cases in which the prominent feature is a glossitis or stomatitis with or without a concomitant diarrhœa. Often there is only a glossitis with atrophy of the papillæ, but there may be active ulceration of the tongue, buccal mucous membrane, or soft palate. Usually the ulceration is intermittent, but it may be so severe as to make the patient's life almost unbearable; on the other hand, in one instance there had been a persistent ulceration of the mouth for more than ten years, which had at times been associated with a dermatitis herpetiformis. In nearly all these cases there was either a complete achlorhydria or a marked hypochlorhydria, and in many of them the administration of acid improved the condition. Treatment in this group, however, may be unsatisfactory as, owing to the soreness of the mouth, it is difficult to persuade the patient to persist with the medicine in adequate doses. In this group, also, we were able to carry out fractional test-meals on every case—in some cases repeated at varying intervals with similar results.

Here again, as in Group 1, the 25 cases fell naturally into the arbitrary groups of achylia (9), hypochlorhydria (6), normal acidities (7), and hyperacidity (3). Table II. summarises the findings:—

TABLE II.*

	Male.	Female.	Total.
Achylia gastrica	1	8	9
Hypochlorhydria—			
(*a*) Peptic activity negligible	1	4	5
(*b*) Peptic activity normal	0	1	1
Normal—			
(*a*) Peptic activity negligible	0	4	4
(*b*) Peptic activity normal	0	3	3
Hyperacidity	0	3	3
	2	23	25

* Two cases in Group 1 also complained of sore tongues or ulcers in the mouth, &c.: these are not included in this Table.

Nineteen cases in this group were given the pepsin-hydrochloric acid mixtures.

(1) After periods varying from 4 to 18 months the results were as follows: six patients with achylia gastrica have remained quite well on the treatment; of five showing hypochlorhydria, four are also quite well but the fifth discontinued treatment and now complains of a sore tongue with flatulent dyspepsia. Of two cases with normal acidity but diminished peptic activity, one is no better and the other has had considerable relief from the glossitis but the arthritis is unchanged; the three with hyperacidity were not given the acid therapy.

(2) The nine remaining cases have had less than three months' treatment, but three with achylia and one with hypo-acidity are responding favourably.

These results should be contrasted with those obtained by Sellei, who distinguishes cases with burning and smarting tongues without visible lesions from the actual glossitis we are describing here, and found moderate degrees of hyperacidity to be common. He treated such cases with dilute alkaline mouth washes and administered alkaline mixtures, with or without atropine, finding that prolonged treatment was necessary.

Dermatoses.

Group 3.—Five cases recorded above, three in Group 1 and two in Group 2, had also concomitant skin affections; a sixth case complained of urticaria and angioneurotic œdema. Three complained of recurrent gastro-intestinal disturbances with urticaria, whilst two had persistent ulceration of the mouth associated with a recurrent dermatitis herpetiformis in one case and urticaria in the other. Fractional gastric analysis demonstrated an achylia gastrica in four cases, hypo-acidity in one case, and hyperacidity in one case. Four cases of urticaria have had no further attacks after 6 to 18 months and in the case with dermatitis herpetiformis some improvement has resulted, but treatment has not been sufficiently lengthy as yet to estimate the final result. The patient with angioneurotic œdema and urticaria has only recently been put on to this treatment.

This association with a skin affection is of interest, since one of us (see Wilkinson and Brockbank) has observed two cases, one of pernicious anæmia, in which an urticarial rash was produced by the liver diet (both fresh liver and liver extracts) but was prevented by the use of hydrochloric acid; the other was a case of symptomless achlorhydria which developed a rash while on acid therapy but was relieved when the acid was discontinued. The association of achlorhydria with many of the dermatoses is not unknown, for Ryle and Barber showed that in 12 cases of acne rosacea five had achlorhydria and two hypo-acidity, and promising results were obtained with acid therapy. Similar results have been obtained by W. H. Brown, who examined 50 cases of rosacea and 50 other dermatoses. He found seven with achlorhydria and eight with hypochlorhydria in the first group, and six and five respectively in the second group. Rulison, in a further group of 50 cases of rosacea, found a corresponding proportion of achlorhydric cases. He also noted the frequent association of functional abnormalities, such as neurotic tendencies, subnormal weight, poor muscular tone, visceroptosis, but constipation rather than diarrhœa. Stein has referred to similar findings.

Rheumatoid Arthritis.

Group 4.—The occurrence of rheumatoid arthritis in association with gastric anacidity has been noted several times. Faber (1913) found achylia gastrica in 15 out of 65 patients with chronic polyarthritis. Borries showed that 30 per cent. of 94 cases had achylia by the Ewald one-hour test-meal, whilst Woodwark and Wallis obtained similar results in 10 cases. Coates and Gordon, also using the Ewald test breakfast, obtained achlorhydria in 14 out of 20 cases of rheumatoid arthritis. Using the fractional method of gastric analysis, Bell found three cases of achlorhydria and one of hypochlorhydria in eight cases, but this was not confirmed by Douthwaite and others. Miller and Smith, from a study of 250 cases, came to the conclusion that achlorhydria and hypochlorhydria in chronic arthritis is five times as great as in normal subjects, but only slightly greater than in other diseases. In 420 collected cases of hypo-acidity, Sager and Hartman only found eight cases of arthritis, but this is a misleading figure since there were probably many cases not investigated for gastric acidity. On the other hand, Lottrup recently described a series of cases of chronic progressive primary polyarthritis in which 44 per cent. had achylia gastrica while 58 per cent. had a simple anæmia; this was in contradistinction to other forms of arthritis in which the figures were 15 per cent. and 34 per cent. respectively.

Five of our cases (not included in Groups 1 and 2) of rheumatoid arthritis were examined by us on account of a recurrent diarrhœa (one case) or of a sore tongue (four cases), and six had no other symptoms but the joint affections. These showed achylia gastrica in four cases, hypo-acidity in five, and normal acidities in the remaining two. In all there was a marked improvement in the general health after acid therapy. The sore tongues and chronic diarrhœa were cured, although the arthritic conditions showed some relief in two cases. One patient has since ceased to take the acid mixture and now complains of a sore, dry tongue.

Debility.

Group 5.—Owing to the frequency with which debility and a varying degree of a secondary type of anæmia occurred in these patients, we investigated another series of 10 cases in which debility was the outstanding symptom and in which there were no other physical signs or definite symptoms. In four instances we found an achylia gastrica and in four a hypochlorhydria. In the other two the acidity was normal but there was a reduced peptic activity. Often the history of an indefinite debility extended over a considerable period. In one instance the patient had been operated on 13 years before for a suspected cancer of the stomach and since that time had led the life of a chronic invalid. In nine of these cases the administration of acid was followed by a marked improvement which relapsed if for any reason the acid was discontinued. In one case the improvement was only temporary, but in this instance an intense neurasthenia was the predominant factor. In several of these cases the patient's appearance suggested the presence of a tuberculous focus, but no evidence of this could be obtained either clinically or radiographically. In this connexion, however, it should be remembered that achlorhydria is known to occur in 75 per cent. of cases with advanced phthisis, and the importance of eliminating its presence cannot be too greatly emphasised.

Conclusions.

From our investigations there can be no doubt that diminished or absent secretion of hydrochloric acid is very much more common than is generally supposed, and it may be associated with many conditions which at first sight appear to have little relation to one another. We are not concerned here with such well-known conditions as pernicious anæmia, postero-lateral sclerosis, and late gastric carcinoma.

We have endeavoured to show that in a certain type of case in which gastro-intestinal symptoms are present there is often a marked impairment of gastric secretion, which can frequently be diagnosed clinically and the clinical condition rectified by suitable therapy. It is not clear whether the achlorhydria or hypo-acidity is a primary condition responsible for the symptoms, or whether it is secondary to the gastro-intestinal disturbance. The prompt response to hydrochloric acid therapy would appear to support the former view. On the other hand, the recent work of Farrell, who produced an experimental colitis in animals and showed that it caused a secondary diminution in acid secretion, is in favour of the latter point of view, but the conditions are not comparable.

It appears to be more likely that the deficiency of hydrochloric acid and pepsinogen secretion is a primary condition, and that the absence of the natural antiseptic action of the gastric juice allows an abnormal bacteriological infection to occur in the intestinal tract. As a result, the patient suffers from an intestinal intoxication which may manifest itself in various ways according to the particular individual.

Taking the series as a whole, 76 out of 100 cases show either achylia or hypo-acidity, and a noticeable feature is the predominance of women over men, in the proportion of 55 to 21.

Since cancer of the stomach is very much more common in men than in women, achlorhydria in itself would not appear to be a common factor in its production, as has been suggested by Hurst.

Summary.

A preliminary report is presented in which an association has been shown to exist between a gastric secretory dysfunction and certain clinical conditions (excluding such well-known diseases as pernicious anæmia). A hundred cases have been examined and they fall naturally into five groups.

Group 1.—This group is a definite clinical entity characterised by gastro-intestinal disturbances and recurrent diarrhœa; flatulent dyspepsia and neurasthenia are prominent symptoms. The clinical picture is sufficiently characteristic as to allow the diagnosis of achlorhydria to be made with considerable certainty. There were 53 cases: 25 showed achylia gastrica and 18 hypo-acidity (8 with deficient peptic activity) on examination by fractional test-meal. At periods varying between four months and two years after the institution of treatment with a mixture of pepsin and hydrochloric acid 24 out of 28 are cured, whilst one is very much better, one is better but has occasional attacks of diarrhœa, one is not improved, and one died from subacute liver atrophy. One other case with a normal gastric acidity but diminished peptic activity was also cured by similar treatment. Fifteen cases with achlorhydria or hypo-acidity have been under observation for less than three months but are responding to treatment. Nine others with normal secretion or hyperacidity were not given this treatment.

Group 2.—Comprises 25 cases in which the prominent feature was a sore tongue or an ulcerative stomatitis. The gastro-intestinal disturbances met with in Group 1 may or may not be present. Fractional gastric analysis of these cases showed 9 had achylia, 6 hypochlorhydria (only one having a normal peptic activity), 7 with a normal acidity (four with reduced peptic activity), and 3 with hyperacidity. Treatment was difficult owing to the pain produced by the acid therapy, but ten cases after pepsin and hydrochloric acid therapy had been commenced have not had any further trouble and are now quite well after periods of 4–18 months; one was also quite well until she discontinued the treatment and she now complains of a sore tongue again. Of two with normal acidity, one is much improved and the other has failed to benefit by the treatment. Three with achylia and one with hypochlorhydria out of the nine other cases have responded to treatment, but have not been under observation for more than two to three months.

Group 3.—In five cases skin lesions were complained of in addition to the gastro-intestinal or glossitic symptoms, whilst one other had an urticaria and angioneurotic œdema. Achylia was present in four, hypo-acidity in one, and hyperacidity in one of the cases, and the administration of the pepsin-hydrochloric acid mixture completely relieved the condition in all but the last case.

Group 4.—Five cases of rheumatoid arthritis were examined; one associated with diarrhœa had a hypo-acidity, whilst in four, with histories of glossitis, three had achylia and one hypo-acidity. Six others showed achylia (1), hypo-acidity (3), and normal acidity (2). In all of them the administration of hydrochloric acid greatly improved the general health and apparently alleviated the joint symptoms in two.

Group 5.—Comprises 10 cases of debility with degrees of secondary anæmia, for which no cause could be found. Four had achylia and four had hypochlorhydria. All were very much improved after the administration of hydrochloric acid and pepsin, but one has since relapsed.

In these series the predominance in numbers of women over men is very striking; being 2·6 to 1 in the total number of cases showing deficient gastric secretion but 3·3 to 1 in cases with achylia gastrica.

We wish to thank the honorary physicians of the Manchester Royal Infirmary for kindly permitting us to include some of their cases.

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Hospital Accommodation at Swindon.—The Great Western Medical Fund Society has recommended that the G.W.R. be asked to agree to the erection of a new hospital of 80 beds on the present site, the cost, estimated at £44,000, to be lent by the Company on mortgage. Should this course be followed, the suggested amalgamation with the Swindon and North Wilts Victoria Hospital will not take place. The Committee of the Medical Fund Society express the opinion that a voluntary basis and a friendly society basis cannot be satisfactorily amalgamated, and that a hospital run as a joint concern would not give the best results. The recent Swindon hospital carnival produced £2200.

Bucks Small-pox Patients.—The Buckinghamshire county council is desirous of providing a small-pox hospital for the southern part of the county, but the Ministry of Health refused permission for the use of a site at Beaconsfield. The Middlesex county council has now declined to allow of the purchase of the old small-pox hospital at Yeading belonging to the Uxbridge and District Joint Hospital Board on the ground that there is no small-pox hospital in the administrative county, that it is undesirable that there should be any such hospital, and that Yeading Hospital is in a rapidly developing district which will probably, in the near future, be the centre of a thickly populated area of working-class houses.

GRAPHIC BLOOD PRESSURE RECORDS:

A NEW CLINICAL METHOD.

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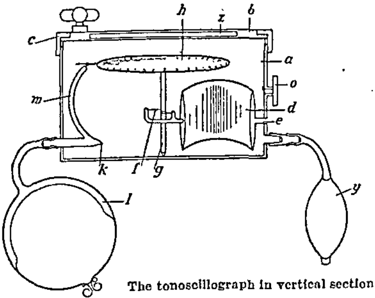
For many years it has been possible to obtain tracings of blood pressure by means of a kymograph. In clinical medicine, however, through lack of any satisfactory objective mode of registration, a numerical formula has had to represent "the complete arterial pressure picture." [1] A distinct advance has now been made by Prof. J. Plesch,[2] of Berlin, who, after several years' experiment, has succeeded in perfecting the Tonoscillograph, an instrument, which in its final form, ensures graphic and permanent records of arterial and capillary pressures, as well as of individual pulse characters.

The Apparatus.

Fig. 1 is a diagram of the apparatus in vertical section. The outer metal case (*a*) is made air-tight by the hinged lid (*b*), in which is set a glass window, and is fastened by means of the device (*c*). Inside the case (*a*) are two manometer systems. One of the manometers (*d*) communicates through the aperture (*e*) with the outer air, so that the interior of this manometer remains constantly under atmospheric pressure. When the pressure within (*a*) is increased by the rubber inflating bulb (*y*) the manometer (*d*) becomes bent, thus causing the thread (*f*) to be unwound, thereby rotating the table (*h*) fixed to the spindle (*g*). The other manometer (*m*) has a capillary opening (*k*) into the case (*a*), and is in *direct communication* with the armlet (*l*). By pumping air into the case, the armlet simultaneously becomes inflated through the capillary opening (*k*). In this way the thin-walled and highly sensitive manometer tube (*m*) is protected from over-distension. Nevertheless, by means of the capillary opening, equalisation of pressure is secured, so that the external and internal pressures remain the same.

Fig. 1.

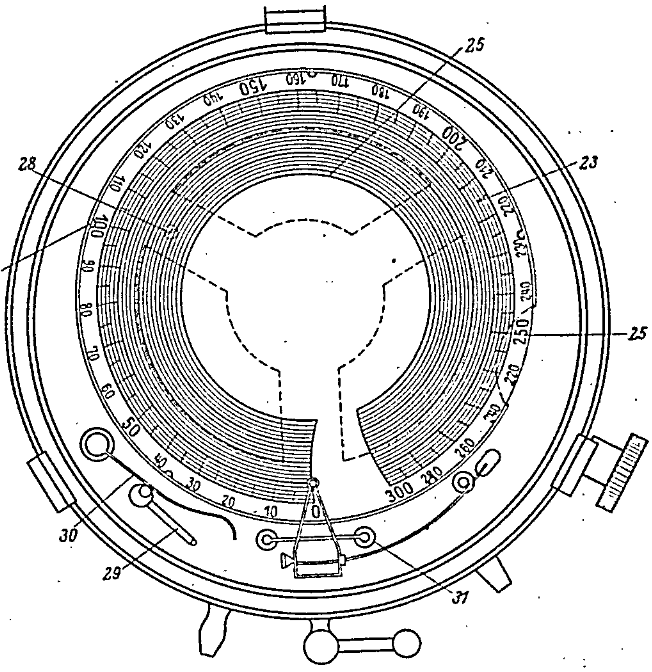


The tonoscillograph in vertical section.

Figs. 1 to 3 by courtesy of Prof. Plesch.

Attached to the manometer tube (*m*) is the writing pen (*n*), which records any movement directly on a graduated paper disc set on the table (*h*). Any increase in pressure caused by the pulse will, therefore, be recorded by this pen before the difference can be equalised through the capillary opening (*k*). The size of this aperture can be regulated by a lever (shown in Fig. 2); it will readily be seen that the stronger the pulse and the smaller the capillary opening the larger will be the oscillations recorded by the pen. Should these oscillations become unduly large in the case of powerfully beating pulses they can be damped by increasing the size of the capillary aperture. The valve (*o*) facilitates even reduction of pressure in order that the disc may return to the zero position. During the time that the pressure is falling the pen (*n*) automatically, and in true accordance with the pulse volume, traces impulses, communicated by means of the armlet, on the disc in the form of a curve, the tonoscillogram.

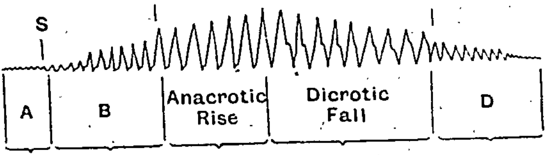
FIG. 2.



The tonoscillograph viewed from above.

Fig. 2 shows the apparatus viewed from above. At the top is the hinge upon which the circular metal lid surrounding the glass window turns in opening and closing. Opposite to this at the foot is the capillary lever mentioned above; to the left of this is a nozzle for the rubber tube connecting with the armlet, to the right an attachment for the inflating bulb; still further to the right a screw-valve for securing even release of internal pressure. The paper disc (25), graduated from 0 to 300 mm. Hg, rests upon a rotating aluminium table (23), the edges of this being represented in the diagram by broken lines. Tiny projections around its circumference hold the paper disc flat. Opposite (0) is the writing pen with angled supports by which it can be raised or lowered on a transverse bridge (31) actuated by the capillary lever. To the left of the bridge is a spring (30) for arresting movements of the table.

FIG. 3.



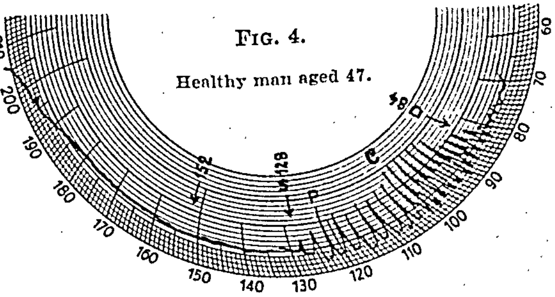
The arterial pressure curve. A, Stages of approach, B, development, C, full oscillations, D, and pulsations respectively; S, systolic pressure; DI, diastolic pressure; P, point at which pulse waves increase to nearly double the height of the preceding waves.

The Records.

Fig. 3 is an analysis of the curve of arterial pressure and volume obtainable with the instrument; the general form of the curve closely resembles those illustrating a paper of mine in 1911 on the sphygmo-oscillometric method of Pachon.[3] As the external pressure is allowed gradually to fall, an approximately even series of small undulations (A) appears as each successive pulse wave impinges against the upper point of arterial constriction. The point for the systolic pressure (S) is marked by the first of a series of slowly increasing waves which, after a varying stage (B) at the point (P) suddenly become almost double the size o the preceding waves From this point u to the largest oscilla tion (C) the increas is much mor gradual. Thenc onwards the curv is flatter in typ the oscillations slow diminishing to th point of diastolic pressure (D), at which they undergo a sudden reduction by half. Throughout the whole of the ascending portion of the curve each oscillation is seen to be separated by a flat interval, which becomes less as the highest oscillation is approached. Thereafter the oscillations assume a peak-like ascent. During the ascending portion of the curve the oscillations are anacrotic in form. During the descending portion they are dicrotic, but only as far as the point of minimal pressure. Beyond this point, the external and internal pressures being equalised, the pulse waves are represented by the stage of pulsations.

FIG. 4.

Healthy man aged 47.



The foregoing stages are exemplified in the following curves of arterial pressure and pulse volume taken from cases under my care (Figs. 4 to 8).

In the case of a healthy man, aged 47 years (Fig. 4) the stage of approach extends from 152 mm. Hg to the poin of systolic pressure (S) at 128 mm. Next comes a shor developmental stage, denoting healthy tone of arteris walls, which ends at 124 mm. (P), from which point the stag of full pulse oscillations with flat anacrotic waves is continued the intervals becoming less spaced and flattened at the bas as they approach (C). Following the ascending portion o the curve ending at (C), *the waves become more uniform in* amplitude (descending portion) with evident dicrotism, this ceasing abruptly at 84 mm., the point of diastolic pressure (D). The stage of pulsations completes the curve-analysis.

Fig. 5 is a case of early but *typical* hyperthyroidism in a lady aged 36, seen in consultation with Dr. R. Tudor Edwards, of Wembley. Herein the various stages of the arterial curve are clearly recognisable.

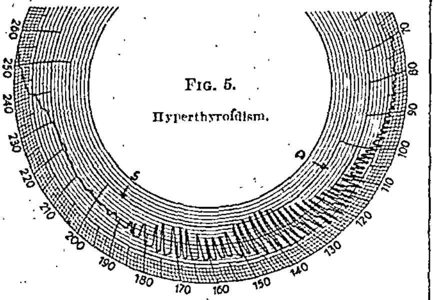


FIG. 5.

Hyperthyroidism.

Fig. 6 is the tracing of a man aged 60 years, 6 feet in height and weighing 15 stone, a teetotaller and non-smoker, athletic in his earlier years and fond of mountain climbing. The chief complaints were of "thumping in the head while in bed," and of pressure feelings referred to the vertex. The heart showed considerable left ventricular preponderance, and a systolic murmur was audible over the whole præcordium with ringing aortic second sound—a case of arterio-sclerosis. (S) is at 194 mm. Anacrotic ascent ends at 150 mm. Descent is gradual to (D) at 104, where dicrotism suddenly ends. Well-marked pulsations follow this point.

In striking contrast to all other curves that I have yet had the opportunity of taking comes Fig. 7, that of a hospital patient, aged 67, housewife, whom I showed in 1925 at the Royal Society of Medicine[4] as a case of hyperpiesia, since established to be of gouty origin.

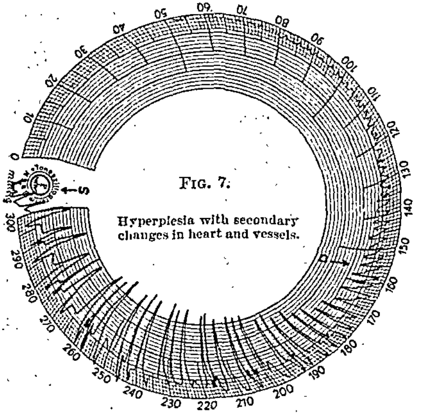


FIG. 7.

Hyperpiesia with secondary changes in heart and vessels.

The present clinical picture is one of cardiac dilatation consequent upon hypertrophy, and changes in the vessels arising independently of renal changes such as occur in the usual forms of Bright's disease. In February, 1930, hæmorrhage occurred in the left retina with impairment of vision two days later. One month after this blurring of speech was noticed, which persists. The arterial curve is of unusually bold character, despite the fact that the capillary lever was turned to the full extent so as to damp the amplitude of oscillations. Each pulse beat is seen to be enormous, corresponding clinically with a pulse of full volume and high tension. At every third beat is a regular sequence of premature contractions. The systolic pressure is at approximately 306 mm., but cannot be precisely fixed because this sphygmomanometer, like the majority of others, has been constructed on the assumption that pressures above 300 mm. Hg cannot occur. This patient's pressure, however, when first seen was 320 mm. systolic, and I have had other cases in my own practice with maximal pressures above 300 mm. The diastolic pressure is reached at 155 mm., giving a differential pressure of about 150 mm.

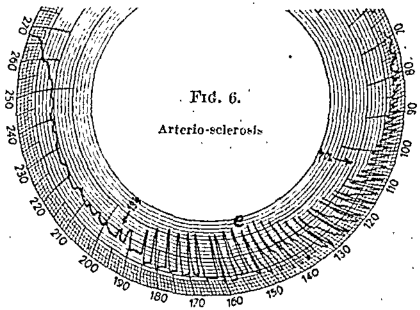


FIG. 6.

Arterio-sclerosis.

Fig. 8 may be regarded as the opposite of Fig. 7 in that it is an example of very low arterial pressure. (S) stands at 94 mm., and (D) at 64, thus yielding a small differential pressure of only 30 mm. The amplitude of oscillation is comparatively tiny, although the capillary lever was set to the smallest opening so as to secure as large excursions of the pen as possible. The picture is one of low vitality and low resistance.

Comparison of tonoscillographic curves brings out many additional points of fresh value and significance. The time factor is as yet far too short for me to enter into any detailed discussion of these. Hence I have put forward merely an outline sketch of the apparatus, and its possibilities in the belief that other workers may be sufficiently interested to profit by the opportunities that Prof. Plesch has so ingeniously afforded.

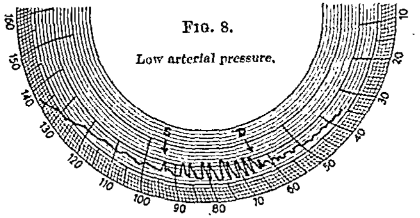


FIG. 8.

Low arterial pressure.

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NEMBUTAL AS A BASAL HYPNOTIC IN GENERAL ANÆSTHESIA.

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THE use of the derivatives of barbituric acid as anæsthetics and hypnotics has been closely studied during the last two years, especially in the United States, and the literature is now extensive. Lundy quotes no fewer than 466 references.[1] As regards the use of the barbiturates in human surgery, one may draw the following conclusions from the latest reports [2]:—

1. The employment of a barbiturate as the sole anæsthetic is inadvisable.
2. As basal hypnotics the barbiturates are among the most valuable drugs available in surgery.
3. The suitability of a barbiturate as a basal hypnotic depends largely upon toxicity and shortness of action. The greater the toxicity the smaller is the dose required, and the smaller the amount of the drug to be detoxicated or eliminated. This results in a shorter period of recovery and lessens the disadvantages associated with prolonged hypnosis such as delirium and depression. The extra nursing care of a patient unconscious for many hours is also obviated.

Nembutal (sodium ethyl methyl butyl barbiturate) has these characteristics more clearly developed than any barbiturate so far discovered. It is about twice as toxic as sodium amytal,[3] and its action is much shorter. Lundy states [3] that it is more sedative than hypnotic and that it causes delirium and restlessness less often than other barbiturates. Nembutal (Abbott) is supplied in capsules (grs. 1½) for oral or rectal administration, and in ampoules (grs. 7½) for intravenous use after being dissolved in distilled water (10 c.cm.).

I have administered nembutal as a basal hypnotic to 262 patients. The intravenous route was used in 180 patients, whose ages varied from 9 to 74 years. Oral or rectal administration was employed in the remaining cases which included young children, the aged, obese subjects in whom the veins were not readily accessible, patients in whom the immediate operative risk was extreme, and some cases in which spinal analgesia followed. The age in these patients was between 3 and 84 years. The operations included laparotomy for various conditions, excision of the rectum, tongue or breast, exophthalmic goitre, tonsillectomy, and various plastic operations. Except in cases in which spinal analgesia was employed, the supplementary anæsthetic was nitrous oxide and oxygen with the addition of ether when necessary.

Administration.—Atropine (grs. 1/100) is given half an hour before operation and in adults morphia (grs. 1/6 to 1/4) in addition, providing no contra-indication exists. When the oral or rectal route is selected, nembutal in capsule is given to adults at the same time as the hypodermic injection. For children, for reasons to be given later, it is more satisfactory to administer grs. 1½ two hours before operation in order to judge the response, and to repeat the dose one hour before operation if the sedative effect obtained is insufficient. For intravenous injection a 10 c.cm. syringe is used with a fine hypodermic needle, and the solution is injected at the rate of about 1 c.cm. per minute.

Effect of the Drug.

1. When given by *mouth* or by *rectum* nembutal has a sedative effect which may amount to mild amnesia or actual sleep. In operations in which complete muscular relaxation is not required, supplementary anæsthesia can be maintained with nitrous oxide and oxygen, without cyanosis. Where complete relaxation is essential, the addition of ether is necessary, but the amount is much reduced. Irrespective of whether ether has been added or not, the sedative effect of nembutal continues for one to five hours after operation according to the reaction of the patient. There is a desire to sleep, and nausea and vomiting are diminished, or more usually absent. The patient can be easily aroused while in this state and may respond to questions, but the memory of events at this period is hazy or absent .

2. When administered *intravenously* the injection need not be begun until ten minutes before the time of operation, for the effect is quickly and accurately obtained. No calculation of dose on a body-weight basis is necessary, the amount being determined by the progressive effect during injection. The solution should be freshly prepared and quite clear. The injection should be carried out, preferably in bed, at the rate of about 1 c.cm. per minute, a close watch being kept upon the patient throughout. The most satisfactory method of judging the dose is to engage the patient in quiet conversation. The response to questions becomes gradually more and more indistinct, and without any period of excitement the patient passes into a quiet sleep. The dose is the minimum amount necessary to produce this effect after slow and careful injection. Intravenously, the minimum dose in this series was grs. 3, and the maximum grs. 7½. When sleep ensues after intravenous injection respiration is quiet, diminished in amplitude, and normal in rate.

It has been stated that a fall in blood pressure takes place during intravenous administration of a barbiturate,[1] but so far as careful digital determination goes, with nembutal the fall is trivial or absent.

During the course of the operation after intravenous injection the amount of the supplementary anæsthetic required is less than with oral or rectal administration. This is clearly the result of the more exact dosag by the intravenous route. In two laparotomi the amount of ether required to obtain complet relaxation was apparently independent of the actio of nembutal. These cases were exceptional whe compared with others.

Again, owing to the more accurate dosage, the pos operative effect following intravenous injection more marked than with oral or rectal administratio Drowsiness or sleep from one to five hours after operation is the usual course, with hazy memory for even during that period. In a few instances the patier was fully conscious on return to bed.

POST-OPERATIVE COMPLICATIONS.

Irrespective of the dose or method of administratio a variable degree of restlessness was noted during th immediate post-operative period in 13 patients. Fiv were children, and their condition was controlled b potassium bromide. Of the eight adults, fiv responded to morphia hypodermically and the remaining three continued to be restless for several hour One patient who required a considerable amount o ether to obtain relaxation for the removal of retrocæcal appendix began to vomit persistentl on the third day after operation. There was muc abdominal pain and some distension which did no abate until the eighth day. On the ninth day thi patient died suddenly, apparently from pulmonar embolus. No post-mortem examination was obtained and it is questionable whether nembutal was in an way responsible for this result. In one femal patient who stated that she bruised very easily a inflammatory reaction followed the escape of a small quantity of the solution into the subcutaneous tissue.

COMPARISON WITH OTHER BARBITURATES.

In order to compare the results obtainable with other barbiturates, sodium amytal was administered intravenously in 23 cases, and pernocton in 15. All these patients were adults.

Induction of pre-operative sleep with sodium amytal compares favourably with nembutal, but the recovery period is much longer. Pernocton has been reckoned equal to nembutal in toxicity,[2] and the recovery period is about equal. This drug has the advantage of being supplied in solution ready for use. In my brief experience with pernocton, induction of sleep is not so pleasant for the patient, or so uneventful as with nembutal. During injection one patient became violently excited, and in two others there was nausea and retching. One of these patients had previously received nembutal without any such effect.

Discussion.

As with other barbiturates the variable reaction of individuals to nembutal renders the dosage by mouth and by rectum difficult to determine beforehand. This is especially noticeable in children. In general, it may be stated that children are more resistant than adults, and in children the variation has little to do with age or development. For example, one well-developed child aged 7 was fast asleep after the administration of grs. 1½, while another child aged 5, and of small physique, was quiescent, but not asleep after grs. 3 had been given. And yet it has been possible to produce definite amnesia in some adults with grs. 3 only.

It is in the intravenous use of nembutal, however, that the greatest advantage lies. By this method it is possible to determine the dose accurately during injection of the drug. Here, again, the reaction of the patient seems to bear little relation to age, body-weight, or habits. For example, a man aged 33, weighing 15 st., and having an alcoholic history, responded perfectly to grs. 6 before appendicectomy. He was easily controlled, and well relaxed with nitrous oxide and oxygen and about 3 drachms of ether, without any suboxygenation. At the same time several women of slender build and temperate habits required as much as grs. 7 to produce the desired effect.

Whatever the dose, patients are unanimous in their appreciation of this method of induction and the general lessened tendency to nausea and vomiting. This has been borne out particularly in many patients who had been previously anæsthetised on several occasions. These include some who have had experience of avertin and paraldehyde. They include, also, five doctors.

Intravenous injection of a drug in connexion with anæsthesia is open to criticism as an unnecessary complication not unattended by danger. If injection is carried out carefully and slowly, with aseptic precautions, it need involve little more risk, and certainly no more discomfort, than a hypodermic injection. From the adult patient's point of view, a prick with a hypodermic needle is usually expected before an operation, and to many it is more acceptable than the retention of a rectal injection of any kind. Intravenous injection of nembutal is available, further, when rectal pre-medication is ruled out by the nature of the operation. It requires a minimum of apparatus and preparation. It is carried out by the anæsthetist himself without the necessity for his attendance a considerable time before the operation. There is, also, no question of a nurse being called upon to share the responsibility of administration.

Many patients dread an anæsthetic more than the operation itself. By intravenous injection of nembutal it is possible to mitigate these circumstances in a large majority of cases. It is perhaps needless to add that a drug of such potency should only be in the hands of experienced persons fully conversant with all the principles of general anæsthesia. Its use is not recommended as a routine, but only in such cases where the necessity is indicated.

Summary.

(1) Intravenous injection of nembutal provides a pleasant method of bridging the gap between consciousness and unconsciousness before general anæsthesia. (2) The amount of anæsthetic subsequently required is diminished. (3) Post-operative nausea and vomiting are diminished or absent. (4) The chief disadvantage is post-operative restlessness in a small percentage of cases (about 10 per cent.).

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CLINICAL AND LABORATORY NOTES

A CASE OF TEAKWOOD DERMATITIS.

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ALTHOUGH it is known that workers with teak may suffer from irritation of the skin, the actual number of cases reported is small.

A man, aged 30, presented himself at hospital on May 8th, 1930, complaining of an irritating dermatitis of the dorsal surfaces of the hands and forearms, the face and neck, and the genitals. He stated that the condition had begun on April 10th, and had lasted three weeks, when he had returned to work for three days, but had been forced to stop again owing to recurrence.

In May, 1929, he had had a similar attack, which had lasted three weeks and had been succeeded by boils on the trunk and styes on the eyelids. He was employed as a *shipwright*, and on detailed inquiry as to the nature of his work it was learnt that he had been transferred from metal plates to woodwork, and he believed that the eruption occurred on each occasion after handling teak.

On examination an erythemato-vesicular eruption was observed on the dorsal surfaces of both hands and on the forearms. The face and neck were erythematous, with marked œdema round the eyes. He complained of extreme irritation. The skin was not abnormal otherwise, and no pathological condition was found on physical examination.

The eruption responded rapidly to sedative lotions but, as in the previous year, after subsidence of the acute condition a small number of boils developed.

When recovery was complete the patient was taken into hospital for observation, to investigate his sensitiveness to teakwood before returning to work. On June 4th he was given a piece of freshly sawn teak (Rangoon) to hold in his hand for an hour. Six hours later he complained of irritation on the backs of the hands. The following day there was an erythematous eruption on the backs of the hands and on the face, and the eyes became œdematous; this condition gradually increased in severity until the third day after touching the wood, when there was a well-marked erythemato-vesicular eruption on the dorsum of the hands, the lower third of the forearms, and the face and neck, and the irritation was severe. The condition readily responded to treatment with ichthyol in a zinc calamine lotion.

The effect of teak dust and various teak extracts on healthy skins was investigated by Hoffmann,[1] and as a result of his experiments he came to the conclusion that the irritant action of teak was due to the presence of free unsaturated resinic acid, especially in the dust of freshly cut wood. Willmott Evans [2] considered that the aromatic oil in the heart wood was the essential cause. In the case under consideration the wood used for the test, though freshly sawn, had been in the timber yard for some time. The dust was not applied and heart wood was not used. Some other explanation must therefore be sought.

The interesting features of the case are: the marked susceptibility to, and the shortness of the time of contact with, the irritant; the early onset of symptoms of irritation, which were localised at first and then gradually spread to other regions, although the source of irritation had been removed; and the similarity in the train of symptoms on each occasion, and in their duration.

The simplicity of the method used to test the case suggests that similar methods might be employed with advantage in those numerous medico-legal cases which are now arising where claims are made for compensation for dermatitis due to dyes and other causes.

UNDULANT FEVER

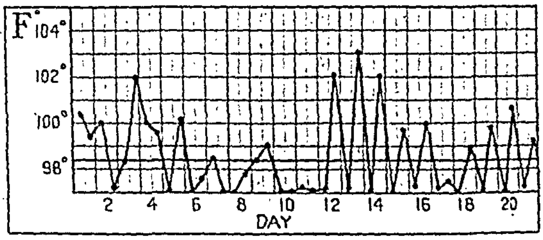
ACQUIRED FROM A GOAT IN ENGLAND.

By Walter Broadbent, M.D. Camb. F.R.C.P. Lond.,

CONSULTING PHYSICIAN TO THE ROYAL ALEXANDRA HOSPITAL; SENIOR PHYSICIAN TO THE ROYAL SUSSEX COUNTY HOSPITAL, BRIGHTON.

A boy, aged 3½, was admitted to the Royal Alexandra Hospital on August 8th with a history of having been ill and running a temperature for a month, with no abnormal physical signs until the day before, when he had complained of pain and stiffness in the neck. On admission he lay on his side with his head retracted and his knees drawn up. His head could only be moved slightly without causing pain. There was a blotchy erythematous rash on the body and limbs. He was quite conscious, and his pupils reacted to light. The optics discs were normal. His plantar reflexes were found to be extensor, his knee-jerks were not obtained, and Kernig's sign was doubtful. The diagnosis then made was tuberculous meningitis, and a lumbar puncture was done, but the fluid came out only under slight pressure and no abnormality was found in it. The temperature came down to normal on the 12th and remained so until the 18th, when it went up to 102° F. at night and 103° F. the next night. It had fallen to normal again by August 23rd.

I saw him for the first time on August 24th. He looked to me more septic than tuberculous. His tongue was furred and his breath heavy; acetone had been found in his urine. His bowels were constipated. I could not detect any enlargement of the spleen, nor any abnormal signs. The two waves on his temperature chart made me suggest undulant fever as the diagnosis. A blood count gave a leucocytosis of 16,000, which was against tuberculosis and in favour of undulant fever, though there was no relative increase of lymphocytes, which is said to be usual; polymorphonuclear cells numbered 71 per cent. and lymphocytes 28 per cent. The agglutination test for *Brucella abortus* was negative in all dilutions, but on August 28th the report of the blood culture was—"Growth of very small Gram-negative organisms arranged as paired cocci or short chains of three or four. Short bacillary forms also present. *Brucella melitensis.*" No growth was obtained from the urine.



Temperature chart from August 7th to 27th.

The house physician, Dr. L. P. Clarke, then got into communication with the child's doctor, Dr. Ronald Matthews of Crawley. Dr. Matthews reported that goats had recently come to the farm where the child lived, but that the child had not drunk any goat's milk. However, exactly 14 days after he had first met the milkman who kept the goats, he had developed his first symptoms. The Ministry of Health, on being notified, examined the goats, and found that the blood of one of them agglutinated *Brucella melitensis* in a dilution of 1 in 25. This goat had also aborted twice. This, then, is a case of undulant fever acquired from a goat. Nearly all the cases of undulant fever in England have been due to the *Brucella abortus* of cows.

Sir Weldon Dalrymple-Champney's Report o undulant fever, which can be obtained from tl Ministry of Health, gives a quite complete accou of the various types of the disease and their cause He points out that infection may occur from mill cream, or cheese, but also from dust, or from handlin skins, as the bacilli are excreted in the urine (infected animals for some time. It is evidentl by this latter means that the child was infected, a he did not drink any of the goat's milk. He has no recovered.

I am much indebted to Dr. Lionel P. Clarke for his note and his keen investigations in regard to this case.

TREATMENT OF QUINSY BY LAUGHTER

By C. R. Croft, D.M. Oxf.

The following tale of the late Dr. John Budd i told in Whitfeld's "History of Plymouth an Devonport."[1]

> "An old lady with a tumour in the throat he asked to se him on the following day. She did so, and as she took seat, a dish of boiled dumplings was placed upon the table Without a moment's notice the doctor pelted his assistan with these missiles, the assistant retaliated, and the pa

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[1] Hoffman, H.: Zentralbl. für Gewerbehyg., 1926, iii., 333.

[2] Evans, Willmott: Brit. Jour. Derm., 1905, xvii., 447.

[1] Whitfeld, H. F.: Plymouth and Devonport. In Times o Peace and War. Devonport, 1900, p. 543.

> cut such sorry figures that the aged sufferer was seized with a fit of uncontrollable laughter and burst the abscess.”

It seems probable that the tumour was a peritonsillar abscess, though admittedly this is uncommon in the aged. The method of treatment is physiological to a degree and deserves further inquiry.

The mechanism is obscure. Sir Arthur Keith gave his opinion that such an abscess would burst under the action of the middle constrictor of the pharynx. I can find no reference in the literature to the movements of the palate during laughter.

A crude examination of the throat in the act of laughing shows two main features, first the descent of the root of the tongue, and secondly the very marked and rapid elevation of the soft palate and the upper part of the faucial arch, presumably by the action of the levator palati. The pillars of the fauces appear to be flaccid and fall together, while the tonsil lying between them does not ascend but rather is held steady by the tongue, or may even descend a little with it. The act of laughter would, therefore, open up the space between the tonsil and the faucial arch, while the suddenness and spontaneity of the action would tear down any adhesions which might be present between these parts.

The following case shows the use of this principle:—

On March 31st, 1930, I saw a married woman, aged 35, with a well-developed attack of acute follicular tonsillitis. On April 3rd swelling and redness above the left tonsil showed that a peritonsillar abscess was impending. On Sunday, April 6th, this was mature, and the patient was suffering very considerable discomfort. The pus seemed to lie deeply, with the origin of the abscess in the posterior part of the supratonsillar recess. I offered her the consolation of the knife but, being a very nervous woman and her relatives away from home, she was averse to the procedure, and I did not press it. Later in the day I returned, prepared at all costs to relieve her discomfort. It transpired that her mother had known Dr. Budd, and it only remained to regale her with the story told above to evoke what laughter her condition would permit.

The effect was dramatic, for, leaning her head over the side of the bed, she evacuated half an ounce of pus into a basin beneath, with immediate relief of her pain and subsequent uninterrupted recovery.

Devonport.

MEDICAL SOCIETIES

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

A MEETING of this Section was held on Nov. 21st, 1930, when Prof. A. H. DAVIDSON gave a presidential address on

Puerperal Sepsis.

Recently work on the bacteriology of the genital tract before and after labour suggested, he said, that the commonest type of severe puerperal sepsis—that due to hæmolytic streptococci—was always an exogenous infection. Non-hæmolytic streptococci were constantly present in the vaginal flora and when resistance was lowered they became virulent and gave rise to an endogenous infection. Predisposing factors played a large part in the causation of sepsis—e.g., lowered resistance due to albuminuria, hæmorrhage, anæmia, or laceration or bruising of the soft parts. Vaginal examination and intra-uterine manipulation must be reduced to a minimum. Many deaths from sepsis followed manual removal of the placenta, an operation which was sometimes rendered necessary by unskilled conduct of the third stage of labour. By way of prophylaxis the patient must be kept in good condition throughout pregnancy and labour. When sepsis had developed, good nursing and the relief of any distressing symptom were of great importance. Drainage of the uterus by postural treatment was essential, and the patient should be made to sit upright in bed for short periods five or six times daily. Intra-uterine douching or exploration should be carried out only when it was reasonably certain that something had been left behind in the uterus. Rheinstätter's curette should never be used in a septic uterus. Hysterectomy and ligation of the pelvic veins had a small place in the treatment of uterine sepsis, but the results were not very encouraging. Many other methods—e.g., glycerin drainage, vaccines and sera, intravenous injection of antiseptics—had had their successes, but none was specific.

Sir WILLIAM SMYLY said that meddlesome midwifery was clearly bad. New methods of interference were frequently introduced, greatly praised, and widely practised for a time, and then fell into disrepute. He thought that at present the chief duty of doctors in connexion with puerperal sepsis was prevention.

Dr. T. M. HEALY thought that nursing did more to help the patient's recovery than any drugs at present known. The chief requirements were sleep and nourishment.

TWO GROUPS.

Dr. GIBBON FITZGIBBON said that cases of puerperal sepsis fell into two distinct groups: (1) those in which the woman after delivery had her tissues undamaged, and (2) those in whom there had been protracted labour, with prolonged devitalising pressure on the soft parts. In group 1 the infection was due to an invasion by pathogenic organisms of a host with a normal resistance. The woman probably had pre-existing susceptibility to infection. In most of these cases the infection was exogenous, due to carriers, indirect contacts, or faulty operative technique, but occasionally the woman was her own carrier—having, for instance, a quiescent dental root infection, or chronic but quiescent infection of the tonsils. The infective organism was always a streptococcus though not necessarily hæmolytic. Such women might have developed general septicæmia after a tooth extraction or an accident. In group 2 the tissues were devitalised by labour. The infecting organism might be exogenous or might belong to the normal flora of the body (staphylococcus, colon bacillus, or non-hæmolytic streptococcus), becoming virulent as a result of tissue damage. In group 1 the course of the disease was like that of any acute infection. The patient might recover in a week or less; she might struggle on and succumb; she might develop enough resistance to localise the disease when recovery would depend on the site of localisation and the possibility of evacuating an abscess; or after weeks of illness she might succumb with partial localisation, or recover without it. The main treatment was general raising of the personal resistance by good nursing, comfort, feeding, and the avoidance of decubitus. When the disease had continued for seven to ten days, localisation must be watched for and treated according to its nature—e.g., multiple abscesses in the uterus requiring hysterectomy, cellulitis, or purulent peritonitis. In group 2 the local condition was important from the outset. The tissue damage might be so great that nothing could be done. The condition was a gangrene; extirpation with a healthy margin might be effective, and was occasionally possible by hysterectomy, but a margin could seldom be obtained, for the parametrium was involved and the result depended upon the patient's resistance holding out until local demarcation had taken place. In this group were infected perineal tears, vaginal tears, and prolonged labours, followed by infection by staphylococci or *B. coli*. Debilitated women who developed thrombosis and phlebitis were usually infected by not very virulent organisms which were localised early or cleared up without localisation, but if the infection was virulent they made little resistance and died rapidly.

Dr. **Bethel Solomons** summarised his opinions as follows: (1) It is wrong to preserve an attitude of watchful expectancy because some treatments do good; at the same time, known harmful treatments should be avoided, and these included intra-uterine douching, digital exploration of the uterus, and curettage. (2) There is a definite but small place for hysterectomy, which if not done too soon or too late will certainly save lives. (3) Glycerin has a *very* small place in treatment; it is especially useful when there is suppression of lochia. (4) To await definite localising signs in every case would retard progress in knowledge. The fact that a patient developed pneumonia, said Dr. Solomons, did not mean that she had not sepsis, for pneumonia was often an end-result of sepsis. This nullified the value of statistics about sepsis, for many cases which were reported as deaths from influenza or pneumonia should rank as septic death. When a patient died of sepsis after Cæsarean section it did not necessarily mean faulty technique; the patient was often profoundly infected at the time of the operation. As regards forceps, it must be admitted that any operation increased the risk of sepsis, but it was often unfortunately necessary to apply forceps to save infant life. The lying-in institution was a safer place than the private house, but the statistics would necessarily always show a higher incidence-rate of sepsis in the former, because of the difficult cases sent in.

MEANS OF IMPROVEMENT.

Dr. D. G. **Madill** said that the report on puerperal sepsis submitted to the last London congress showed 247 cases with 87 deaths—i.e., nearly 33 per cent. Of the 87 deaths, 19 had spontaneous delivery and 68 had active interference. Of the 160 recoveries, 42 had normal labour and 118 active interference. It must be concluded that there were cases of autogenous infection, and this view was supported by the investigations of FitzGibbon and Bigger. In the above series 60 different methods of treatment were used. To prevent sepsis it was necessary to do away with meddlesome midwifery, including unnecessary forceps delivery, and raise the standard of the district nurse by extending her training and by insisting on short post-graduate courses every few years. The one advance in active treatment was the cessation of douching and of the use of the blunt curette. Exploration of the uterus was only permissible if a piece of placenta was known to be retained, or in certain cases to take an intra-uterine culture. When the disease had set in there was no unanimity of opinion on the treatment to be used. It would be useful if the masters and ex-masters of the maternity hospitals would say how they would manage a case (1) in the early stage, or when infection was strongly suspected, and (2) when the disease was established. A great many of the cases listed in the reports of maternity hospitals as normal deliveries did not deserve the term at all, because the women had been in labour for a long time and the tissues were considerably devitalised, and this trauma of the tissues led to sepsis later on. The lines laid down for the treatment of any case of fever seemed to Dr. Madill the best for puerperal sepsis.

Dr. R. J. **Rowlette** said there had been very little advance in the treatment of puerperal sepsis in the last generation or two, whatever advance there might have been in prophylaxis; but he thought that ideas about the causation were now a good deal clearer. The organism most frequently found was the *Streptococcus hæmolyticus*, but there were some cases of acute sepsis due to the *Staphylococcus aureus*. These cases could not be explained as being caused by contamination during the investigation. *S. aureus* was not a common organism in cultures made from the circulating blood. Other organisms were frequently found present in the uterus, such as *Bacillus coli*, but he thought it very doubtful whether *B. coli* was ever the cause of the infection. The suggestion that anaerobes played an important part had never, he thought, been substantiated. One practical advance in the treatment of puerperal sepsis was the abolition of douching. There was evidence also that chemotherapy was injurious. In no condition of bacterial infection was there any reason to suppose that antiseptics introduced into the blood stream had any value. He had often been impressed by the satisfactory results obtained when autogenous vaccines had been given as soon as possible. He had also seen cases in which remarkable results had followed the use of serum, but he thought this could not be depended on, and believed that better results were obtained with vaccines than by serum, while their combined use might also be successful.

Dr. A. P. **Barry** said it was necessary to be certain that a case was really septic, for many cases were treated for sepsis in error.

Dr. G. **Tierney** held that before any advance could be made with vaccines it was necessary to try to estimate the resistance of the patient's blood. At present no such method was available. In acute septic infection the resistance of the patient was so lowered that a vaccine might make the patient worse, and the same was true of sera.

Prof. R. E. **Tottenham** said he always used vaccines in septic cases, and had had very good results. He referred to the danger of imperfect isolation in small private hospitals.

Dr. R. M. **Corbet** pointed out that many treatments hurt the patient very considerably, and the pain lasted for some time. He thought that there was no treatment which was specific, and that any which was not specific, and which caused the patient a good deal of pain, should be discarded.

Dr. A. J. **Horne** maintained that the curtailment of vaginal examinations by students and midwives was very desirable.

Dr. D. J. **Cannon** referred to vaginal discharge in pregnancy.—Dr. **Ninian Falkiner** described a case in which Radiostoleum and S.U.P. were apparently useful and a vaccine after localisation had occurred.

THE ROYAL SOCIETY.

THE CROONIAN LECTURE.

THE Croonian lecture[1] was given on Dec. 11th by Prof. JULES BORDET (Brussels), who was formally welcomed as a foreign member of the Society. He chose as his subject

The Theories of the Bacteriophage.

He began by referring to the striking facts connected with bacteriophagy: that a bacterial culture, grown on the surface of an agar medium, became sprinkled with holes; that a broth to which had been added the active principle was thereby rendered unsuitable as a culture medium; that a turbid microbial suspension, obtained by emulsifying the culture from a solid medium, became clear; and that the active principle regenerated itself in producing its effect. It was, he said, easy to obtain the active principle; it was often found in water, soil, or fæcal materials. Vaccine lymph very often contained a principle acting on the staphylococcus. Gratia, by a whole series of experiments, had proved the absolute identity of the phenomena of Twort and of d'Herelle. It was soon recognised that a number of these principles existed, and that one which acted on a staphylococcus did not necessarily produce any effect on *Bacillus coli*, but sometimes one principle attacked several related species of microbes. When a principle specific for a certain species was brought into contact with another species, its virulence for the latter became enhanced with successive transmissions. The specificity of the principles and their power of adaptation were very variable.

Prof. Bordet outlined the experiments on which d'Herelle had based his virus theory of the bacteriophage: The fact that, in adequate dilution, the spots of lysis on an agar colony were well defined and isolated, was taken by d'Herelle to prove that the virus was present in a corpuscular form and not in a state of solution. In reality, however, the conception of the principle as corpuscular did not strictly involve its being a virus. It lost its activity when heated to about 70°C. It was very probably a colloid, and colloids were, in a sense, composed of particles. Possibly also it might be absorbed by the bacterial debris, and thus be deposited with this debris at certain points on the agar surface. Moreover, even if it were in solution, the phenomenon of isolated spots would still be observed. It was certain that contact with bacteria sensitive to its action was necessary for its reproduction. If gradually diminishing volumes were introduced into a microbial suspension, an extremely weak dose—whether of a virus or of an active principle in solution—would not affect more than a small number of the bacteria present. Individual microbes were not identical, and it was highly probable that they were not all equally sensitive to the lytic principle. When one bacterium succumbed to the principle it became a centre for the regeneration of the agent, which, therefore, became more abundant in the immediate neighbourhood, and could then attack more resistant individuals. Therefore a spot of lysis would appear on each point of the agar on which a more sensitive bacterium had rested. Filtration experiments seemed to show that the molecular or micellar dimensions of the principle were analogous to, if not smaller than, those of the colloidal particles of different albuminoids.

OBJECTIONS TO THE VIRUS THEORY OF D'HERELLE.

The virus theory was seductive by reason of its great simplicity, but the extraordinary resistance of the principle to storage and to the action of chloroform were objections to the presence of a virus. If a very weak dose were introduced into a tube of bouillon inoculated with the sensitive organism, the bacteria would multiply for a few hours, and then the turbid liquid would clarify suddenly; it was difficult to suppose that an intrabacterial virus would attack all the microbes at a given moment almost simultaneously. The facts would be easier to reconcile with the theory of an extrabacterial virus secreting a diffusible ferment, but d'Herelle had shown that the principle could only develop in the presence of living organisms. The regeneration of the principle seemed to be correlated with the bacterial multiplication which preceded the lysis. This seemed favourable to the theory Prof. Bordet had proposed with Cinca ten years before: that the bacterium itself secreted the lytic principle, and that bacteriophagy was in reality an autolysis. With Jaumain he had established that the sensitive bacteria must be not only living but also able to multiply. Lysis and degeneration did not occur in normal saline, but a little peptone or meat extract produced both. The antilytic serum produced in a rabbit retained its activity when heated to 60° C.; a virus that showed such good resistance to storage and chloroform ought not to be destroyed in this way. Stassano and de Beaufort had found that sodium citrate hindered the lytic effect, and Prof. Bordet had shown that the elimination of calcium suppressed the lysis in bouillon and hindered the regeneration of the principle. All the principles required some calcium, but they did not all require the same dose.

BACTERIOPHAGY AND AUTOLYSIS.

The theory of Bordet and Cinca was that the bacteria themselves reproduced the lytic principle. The intense lytic action called bacteriophagy represented the pathological exaggeration of a physiological process. The normal function which in some way acted as the source from which the phenomenon of bacteriophagy originated might have some relation to the phenomena of mutation. Individual microbes of the same species exhibited appreciable differences among themselves. Distinct types became constituted, and an equilibrium might be established between them. The maintenance of this equilibrium could not be easily explained unless there were corrective influences to discipline the evolution of the species by repressing the tendency of certain strains to excessive preponderance. In this regulator-mechanism should be sought the factors determining the appearance of bacteriophagy.

The first difficulty in this conception was the essential transmissibility of the bacteriophage, which was very simply explained on the theory of a filter-passing virus. The theory of autolysis implied that the sensitive bacteria already possessed materials necessary for the formation of the principle before they were brought into contact with it. This idea was quite plausible on a physiological basis; as an analogy might be cited thrombin, which brought about its own reproduction. One of its constituents, serozyme, existed in the plasma in the form of an inactive mother substance, proserozyme. Thrombin had the power of transforming proserozyme into serozyme ready to unite with cytozyme to form thrombin. The process was initiated by contact with some foreign body, but when once a certain amount of thrombin had been formed the contact was no longer essential for the continuation of the process. If it be imagined that the physiological mechanism which presided over mutations was the primary cause of the lytic principle, it was to be presumed that the effects of the principles would bear some relation to the phenomena of mutation, and that the behaviour of different types of bacteria in culture would manifest an antagonism revealed by lytic phenomena analogous to those of bacteriophagy. Prof. Bordet then described experiments which confirmed this presumption. For instance, a bacteriophage very active on *B. coli* would not act in a very weak dose on an enormous quantity of bacilli; it seemed to disappear for a time. It was hard to suppose that a virus would disappear when presented with too great a quantity. In a slightly stronger dose, however, the lytic principle would reproduce itself, but the principle thus formed was modified and was distinguished by the name of "weak principle" in that it only produced a very incomplete lysis. The modification was really qualitative and not quantitative, for even in high concentration the "weak" principle only produced a partial lysis. It could also be produced by allowing ordinary principles in a moderate dose to act for a very short time only on a large inoculation of *B. coli*. In other words, if the experiment were so planned that the principle acted exclusively on the most sensitive microbes, these regenerated a lytic agent which was so exclusively adapted to them that thereafter it would only act on microbes exactly like them. Thus the individuality of a given type of microbe was reflected in the qualities of the principle which it was capable of elaborating.

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[1] The lecture will be published in full in the next issue of the Proceedings of the Royal Society.

SMOOTH AND ROUGH TYPES AND THE WEAK AND STRONG PRINCIPLES.

An experiment which revealed the connexion between the effects of the principle and the origin of mutations was based on the separation of old cultures of *B. coli* into "smooth" types and "rough" types. The types could be isolated pure, but the smooth tended to give rise to the rough again, especially in bouillon; and the rough, though more stable, could, in time, produce individuals of the smooth type. The weak principle attacked by preference and with great vigour the smooth type, while the rough type presented a pronounced resistance. If a tube of bouillon were inoculated with a drop of the weak principle and a drop of the culture of the smooth type, the liquid remained clear for some hours and then the rough type appeared and multiplied luxuriantly. The smooth culture under the influence of the weak principle underwent a complete metamorphosis into a rough culture absolutely identical with rough cultures produced by separation. In view of these results it was plausible to think that the weak principle might represent a more active form of a substance which the smooth type would normally produce, and which would have the power of making the rough type appear at its expense.

The resistance of the rough type to the weak principle depended very much on concentration. This fact also was unfavourable to the virus theory. After a series of transfers the principle became adapted to the rough strain, and could thereafter be reproduced by making it act on the normal rough type. It had not, however, lost its power of causing lysis of the smooth strain, and, therefore, deserved the name of "strong" principle. Bail and Asheshov had recognised that a single bacteriophagic liquid might contain two principles distinguishable by the size of spots of lysis which they caused on agar. Gratia had identified the principle adapted to the smooth strain ("weak") with the type producing large spots, and the strong principle attacking the rough strain with the type producing small spots. The phenomenon of resistance distinguished the principle, as it was highly specific. The weak principle had no action on the dysentery bacillus, while the strong principle had a powerful action.

If the weak principle could become the strong principle, it was conceivable that the weak principle was itself derived from a principle still weaker, which might be the normal physiological substance responsible for the appearance of the rough at the expense of the smooth strain. If a drop of smooth culture were spread over the whole surface of an agar slope and a small droplet of the weak principle introduced and made to flow down the axis of the surface of the medium, incubation showed a clear stripe of lysis down the middle, bounded by an increasingly thick layer of culture. The layer of microbes contiguous to the clear stripe became slightly transparent, surrounding the stripe with a halo of 2 or 3 mm. thickness. The power of causing a halo seemed to belong only to the weak principle, and the halo was visible because in this region the smooth culture took on the aspect of the rough, as if this metamorphosis were beginning to be accomplished. The weak principle introduced into a suspension of smooth *B. coli*, either living or killed by heat, caused a strong agglutination, but the strong principle did not. It was strange that the weak principle which brought about the metamorphosis from smooth to rough was just the one with the power of agglutinating microbes of the smooth type, even when dead.

In conclusion, Prof. Bordet described experiments indicating that a microbic culture is the seat of perpetual inter-reactions between the individuals which compose it. The appearance of the lytic power seemed to be the index of spontaneous differentiation, but this power contributed to the guidance of evolution in the cultures, since it induced modification in certain receptive types.

PATHOLOGICAL SOCIETY

OF GREAT BRITAIN AND IRELAND.

A MEETING of this Society was held at the London School of Hygiene and Tropical Medicine on Jan. 2nd and 3rd, with Prof. W. W. C. TOPLEY in the chair

A. B. ROSHER (London) had made a systema search for influenza bacilli in the trachea at autc over a period of nearly two years. The proportion of positive results varied from 60 per cent. in the winter to about 15 per cent. in the summer and the curve of frequency corresponded well with the curve of recorded deaths from influenza. Most strain were indol-positive.—S. C. DYKE (Wolverhampton described a case of giant-cell tumour (osteoclastoma originating in the patella, and after six years causing death with widespread metastases in the lungs and elsewhere.—H. L. SHEEHAN (Manchester) had studied the taking up of phenol-red, methylene-blue, and other dyes by the kidney from the blood. Precisely what happens remained undecided, but the resul are difficult to reconcile with the Cushny theory kidney activity.—S. L. BAKER (London) had fou that β radiation of radium killed the virus of th Rous sarcoma and the bacteriophage with more difficulty than ordinary bacteria, but much more easily than it destroyed enzymes and complement.—W. E. GYE (London) confirmed Fujinami's claim that his fowl sarcoma would grow well in ducks.—C. H. ANDREWES (London) showed that the serum of fowls bearing a slow-growing fibro-sarcoma generally *had the power of preventing infection with the* virus of the Rous sarcoma. The sera of some normal fowls did the same.—W. E. GYE and W. J. PURDY (London) by inoculating a goat with filtrates of the Rous sarcoma had obtained a serum which would prevent infection with that tumour and with several other bird tumours. Evidence of the existence of two different antibodies was obtained, only one of which needed complement for its action.—W. SMITH (London) had found that his strain of herpes virus almost constantly produced focal necrosis of the suprarenals in rabbits.—G. H. EAGLES and D. MCCLEAN (London) made out a good case for their having obtained abundant multiplication of vaccine virus outside the body in a medium free from living cells.—W. W. C. TOPLEY, M. GREENWOOD, and J. WILSON (London) *had found that mice on a natural* diet of oats, milk, and water, resisted infection with food-poisoning bacteria better than if they had excess of vitamin A or cabbage, carrots, or mangolds.—H. W. CROWE (London) described some experiments on the bactericidal power of blood.—J. H. DIBLE (Liverpool) showed some curious toxoplasma-like parasites which he had found in the kidneys of mice.—C. H. BROWNING, D. F. CAPPELL, and R. GULBRAUSEN (Glasgow) said that splenectomy made no difference to the occurrence or course of infection of mice by *Trypanosoma congolense*.—L. P. GARROD (London) had found that many organisms of the *group causing thrush gave a common reaction* when examined by precipitin absorption.—A. T. GLENNY and MOLLIE BARR (London) showed the great antigenic superiority of diphtheria toxoid precipitated with potash alum.—R. W. SCARFF (London) had found that splenectomy before the injection of typhoid bacilli much reduced the production of agglutinins, while splenectomy after injection left the animals response unchanged. With injections of foreign red blood corpuscles, preceding splenectomy made no difference to the response, while succeeding removal greatly diminished it.—J. W. BIGGER (Dublin) analysed the influence of various factors on the production of hæmolysin by staphylococci: the most important thing is to keep the reaction neutral or on the acid side.—J. W. BIGGER and W. BOXWELL (Dublin) described a very clear case of auto-hæmagglutination in a patient with a severe anæmia *amenable to liver treatment. It was impossible to* do a blood count or make a proper film except at body temperature.—A. FELIX (London) discussed the O antigen and P. B. WHITE (London) the absorption of agglutinins.—R. A. Q. O'Meara (Dublin) analysed the basis of *the Voges-Proskaner reaction* and demonstrated a new and delicate test for the production of acetoin.—J. D. A. GRAY (Liverpool) showed that the salmonella group of bacilli were especially resistant to the salts of lithium which could usefully be incorporated in media for their discovery and isolation.—W. J. LOGIE (Falkirk) described a case of fatal subpial hæmorrhage caused by a blow which produced no injury to the skull: the perforating arteries were apparently torn through in the cerebral commotion.

DEMONSTRATIONS.

The following demonstrations were also given:—W. G. BARNARD (London): teratoma of ovary with teratomatous metastases in the peritoneum; dermoid cyst of brain; embryonic tumour of kidney; rupture of aorta with dissecting aneurysm; foreign body erosion of aorta.—W. E. GYE and W. J. PURDY (London): series of sporadic fowl tumours.—T. HARE (*London*): *patent ductus arteriosus in an old horse.*—J. A. BRAXTON HICKS (London): ganglionic neuroma; cavernous hæmangeiomata of gracilis and lattisimus dorsi muscles.—J. O. G. LEDINGHAM (London): elementary bodies *in virus diseases; the lining of experimental abscesses* with epithelium.—G. R. CAMERON (London): the intravitam staining of bone with lady's bedstraw and other plants allied to madder.

EDINBURGH OBSTETRICAL SOCIETY.

AT a meeting of this Society on Dec. 19th, 1930, with Dr. H. S. DAVIDSON, the President, in the chair, Dr. JAMES DAVIDSON gave an account of histological changes in

The Liver in Eclampsia.

He had found that the changes in the liver were often much more severe and widespread than is usually recognised. At least three different types of lesion were found—namely, necrosis of the cells of the peripheral zones of the lobules; widespread necrosis of the cells in the central and mid-zones; and in *certain cases no gross hepatic lesions, but only small* areas of focal necrosis. These pathological changes were found (*a*) in cases which clinically were typical of eclampsia, with fits, high blood pressure, &c.; (*b*) in cases with fits and low blood pressure; (*c*) in cases with no fits and high blood pressure; (*d*) in cases with no fits and low blood pressure. In other words, cases diagnosed clinically either as eclampsia or as a severe toxæmia of pregnancy were seen to have the same pathological lesions. Dr. Davidson discussed the striking resemblance of the more severe type of liver lesion to "acute yellow atrophy," and contrasted the renal changes with those found in the liver. *He suggested that the renal lesions were to* a certain extent secondary to the hepatic condition.

Rupture of the Uterus.

Dr. R. EVERETT reported on a case of traumatic rupture of the uterus at the fourth month.

The patient, an unmarried girl of 18, was thrown off the pillion of a motor bicycle going at 30 miles per hour. She was admitted to hospital in a dazed condition, and for several days suffered from cerebral irritation associated with *a moderate degree* of shock and pulse-rate of 120. She had also a Colles's fracture of the left forearm. She gave a history of having missed four periods. There were apparently no abdominal symptoms. She had a slight vaginal discharge from that time for seven weeks when she was readmitted into a gynæcological ward. She was then found to have a hard mass in the right iliac fossa, which was thought to be a hæmatoma of the abdominal wall which had undergone some calcification. On account of the bleeding, curettage was performed, and a few fragments of what appeared to be retained placenta were removed by the curette. The patient was discharged a week later, having had an uninterrupted convalescence with no further bleeding.

Three weeks later she reported at hospital and stated that she was feeling well and had returned to work two days previously. The mass on the right side appeared to be harder, and a radiogram was taken which revealed a lithopædion on the right side. A lipiodol examination was carried out and it was found that the lithopædion was separated from the uterus and was outside the tubes, which suggested that the uterus had ruptured at the right side. At operation the lithopædion was removed with some difficulty; there were numerous adhesions both to it and to the uterus.

The patient was discharged from hospital three weeks after operation, after a satisfactory convalescence, and when she came back, two months later, it was found that her periods were regular while the uterus appeared to be mobile and completely involuted.

REVIEWS AND NOTICES OF BOOKS

Emergency Surgery.

By HAMILTON BAILEY, F.R.C.S., late Surgeon, Dudley Road Hospital, Birmingham; Assistant Surgeon, Liverpool Royal Infirmary; and Surgical Registrar, London Hospital. Vol. I. Abdomen and Pelvis. *Bristol: John Wright and Sons, Ltd.* 1930. Pp. 380. 25*s*.

THIS book is written by a surgeon who has been engaged in emergency surgical work for a number of years. He has kept careful notes of his cases and his opinions have strong claims to consideration. A better name for the book would have been Emergency Operations; for there is no systematic account of the clinical features or diagnostic problems of acute abdominal or pelvic diseases; the information on these subjects is scrappy. But when it comes to operative procedures, Mr. Hamilton Bailey describes clearly and succinctly those methods of treatment which he has found most satisfactory in practice. In general this book forms a reliable guide. There is little to cavil at, and the author merits praise for the high standard which is consistently maintained. Only here and there are his recommendations open to criticism. For instance, in our view stovaine is not the safest nor the best anæsthetic for spinal use (p. 144); the advice to sever the bowel just above a fistula in the upper part of the small intestine and unite it to the transverse colon (p. 275) is not the most satisfactory way to treat this condition; and ileostomy for obstruction, apparently recommended on the authority of Richard Warren (p. 183), is surely open to the objection that the fistula is liable to be made in physiologically obstructed intestine, thus ensuring disaster. The descriptions are mostly so clear and concise that the account of exposure of the kidney on page 277 comes as a disappointment.

We predict that this book will be used widely by that numerous group of surgeons who are called upon only occasionally to deal with surgical emergencies. If they follow the advice offered in these pages with skill their emergency surgery will be of a high standard.

Die Zerebrospinalflüssigkeit.

By Prof. Dr. Med. V. KAFKA. Hamburg: Franz Deuticke. 1930. Pp. 400. M.30.

THE name of Kafka is familiar to English physicians chiefly on account of two reactions with cerebro-spinal fluid, the hæmolysin test of Weil and Kafka, and the paraffin-sol reaction. But his claim as an authority on the cerebro-spinal fluid rests much more on the pioneer work which he published in the years 1910 to 1912 on the presence of ferments in the fluid and the permeability of the choroid plexus in health and disease. We therefore welcome a volume which not only includes the results of this work, and of the abundant later researches which have been founded on it, but brings the whole subject up to date. An unexpectedly large part of the book consists of a discussion of the composition and manner of formation of the cerebro-spinal fluid and its relation to the blood plasma. The part dealing with the changes in disease is relatively small and slight, and technical details receive only passing mention. After a short description of the cells, bacteria, and parasites found in the fluid, a fairly long section is devoted to physical properties such as viscosity, spectroscopy, freezing-point, refraction, pH, and alkali reserve. This is followed by a very full description and discussion of the chemistry of the fluid and of the ferments, hormones, complement, antibodies and other less understood complexes which it may contain. A rather short but interesting chapter on the changes found in various diseases constitutes the second quarter of the book. An account of the changes in the fluid in general paralysis before and after malarial treatment contains much that is unfamiliar in spite of the many papers which have been written on this subject.

The third quarter of the book is a discussion of the formation and absorption of the cerebro-spinal fluid. Here the author is surrounded by a superabundance of documentary evidence, much of which is mutually contradictory, and it is hardly surprising if he sometimes fails to make out a clear case for either side. As regards the mode of formation of the fluid he considers as unproved the dialysation hypothesis of Mestrezat, which has recently been so ably advocated by Walter. The arguments against this hypothesis which he finds most convincing are derived from experiments which indicate that the percentages of such substances as calcium and chloride, which normally differ in blood and cerebro-spinal fluid, become identical when blood is dialysed against fluid. These experiments contradict others by Mestrezat and Fremont Smith, at any rate in so far as they relate to the chlorides, and are so full of possible sources of error that until they are amply corroborated they form an insufficient basis for the rejection of the dialysate theory as a whole. Similarly, while the author rejects the theory of von Monakow, which postulates a circulation of cerebro-spinal fluid through brain tissue, and that of Hassin, who supposes that the function of the choroid plexus is to absorb and not to secrete fluid, he does not give any clear statement of his own views on the circulation and absorption of the fluid. Thus in spite of much critical analysis of various theories the 80 pages devoted to this subject give us little that is new.

The last quarter of the work consists of a bibliography, nearly 100 pages long, which indicates both the author's scholarship and the immensity of the literature dealing with the cerebro-spinal fluid. For clinicians the book may be disappointing, since so much space is taken up with theoretical considerations and the discussion of abstruse points that little is left for practical details, but research workers and those to whom the subject is already familiar will find in it a remarkably complete résumé of what is already known and many suggestions for further investigations.

Introduction to Mental Hygiene.

By ERNEST R. GROVES, Research Professor of Sociology, University of North Carolina; and PHYLLIS BLANCHARD, Psychologist, Philadelphia Child Guidance Clinic. London: Gerald Howe, Ltd. 1930. Pp. 467. 16*s*.

MENTAL hygiene implies reform and education as regards major and minor mental disorder, and difficulties in social or family adjustment, and this book gathers together the many threads by which it makes connexion with practical problems. The mental hygiene movement has grown rapidly in the United States, and, since it involves a radical readjustment of our views and judgments upon motives and conduct, this extensive résumé of its activities makes us wonder what influence it will ultimately have. "This profound task of salvaging human nature" (p. 28) might suggest the crank, but such matters as the mental hygiene of childhood, the school, business and industry, of religion and social work, are kept in close contact with reality and handled objectively. But the suggestions for class-room discussion and for written reports at the end of each chapter are likely to lead to satisfaction with verbal exercises, and it is doubtful how far the inner emotional resistances present in everyone can be removed by the intellectual approach. A brief acknowledgment leaves the reader to think that Freud's chief contribution to mental hygiene was in pointing out the important rôle of the "psychic trauma" in the ætiology of the psychoneuroses, the working out of a technique for the discovery of the trauma, and the re-education of the patient without the use of hypnosis, whilst Prof. Groves invites discussion of the causes of "parent fixation" after a chapter in which no mention is made of the original use and meaning of that conception. Perhaps the authors decided that to discuss unconscious processes would destroy the simplicity of the subject as they present it. So far as the principles of mental hygiene can be elaborated with that limitation they have produced a useful and up-to-date book.

Diseases of Infants and Children.

By F. M. B. ALLEN, M.D., M.R.C.P. Lond., Assistant Physician, Belfast Hospital for Sick Children. London: Baillière, Tindall and Cox. 1930. Pp. 595. 15*s*.

THIS book is intended to provide senior students and practitioners with a practical manual of disease in children. Theoretical considerations are avoided as far as possible, and symptomatology and treatment considered in detail. A praiseworthy feature is the great proportion of space which is devoted to the commoner diseases which are of real importance in practice. In the chapter on infant feeding the author has made simplicity his principal object, and has certainly achieved it, though possibly at the cost of providing a somewhat limited range of method. The descriptions of the symptoms of common diseases are well done, and will impress the student with the importance of clinical observation, while much recent work has been included in the accounts of treatment. A useful appendix contains details of some laboratory tests and therapeutic measures.

The book is a sound guide to the practical side of pædiatrics.

Die Erkrankungen der Leber und Gallenwege.

By Prof. Dr. GEORG LEPEHNE. München: J. F. Lehmanns. 1930. Pp. 163. M.6.

THIS little volume was written for the *Münchener Medizinische Wochenschrift* and is now published for the first time in book form. It is a short and clear account of diseases of the liver and gall-bladder primarily intended for the general practitioner. After an initial account of pathology, diagnosis, and therapy in general, the succeeding nine chapters are devoted to liver disorders and diseases, and the last two only to pathological conditions of the gall-bladder and bile-ducts. This is, however, no unfair division, and the chapters on the whole are well balanced. Prof. Lepehne writes definitely and concisely and states the problems at issue fairly and impartially. Biliary drainage, liver function tests, and cholecystography are carefully described. The chapter on catarrhal jaundice, which the author, in line with most present-day authorities, regards as a mild acute hepatitis and not primarily as a catarrhal obstruction, is interesting, and the reader will find other suggestive and provocative paragraphs in this volume. The author's object was to provide diagnostic help to the clinician at the bedside and in no sense to compile a laboratory or technical handbook. This object has been admirably achieved.

Diet in Disease.

By GEORGE A. HARROP, JR., M.D., Associate Professor of Medicine, Johns Hopkins University. Philadelphia: P. Blakiston's Son and Co., Inc. 1930. Pp. 404.

THIS should prove a useful handbook for those engaged in medical practice. Approximately one-half of the book is occupied by an account of the principles of nutrition and the special properties of common foods, and the remainder is devoted to the dietetic treatment of those diseases and disturbances of nutrition in which regulation of food is commonly acknowledged to play an important part. The subject is treated throughout along thoroughly practical lines, from the point of view of the physician who is anxious to give good advice to the individual patient. The principles determining the construction of suitable diets for such conditions as obesity, undernutrition, anæmia, nephritis, diabetes, and gastro-intestinal disorders are dealt with in turn, and sample diets are given. Among the appendices to the volume will be found food-tables, cooking recipes, and a useful account of the Jewish dietary laws.

Applied Electrocardiography.

By AARON E. PARSONNET, M.D., F.A.C.P., and ALBERT S. HYMAN, A.B., M.D., F.A.C.P. London: Macmillan and Co., Ltd. Pp. 206. 17*s*.

IN the closing paragraph of their introduction, the authors of this book express the hope that it may serve to remove that inferiority complex from which the general practitioner is apt to suffer when he contemplates the use of the electrocardiograph. Whether they have succeeded in that object seems doubtful, but the pages which follow appear to provide more than adequate nourishment for such a complex. In a book intended for students and general practitioners it is quite unnecessary to devote 30 pages to the description of various types of electrocardiographic apparatus. The working mechanism is of no interest to the practitioner; all he wants to know is when and how the instrument will help him in his practice.

In these circumstances dogmatism would be excusable. The subject must be simplified as much as possible. To introduce such generally discarded theories as that of auricular fibrillation being due to causes other than circus movement (p. 106) can only serve to confuse the novice. Again, the interpretation of several of the curves is incorrect. For example, the record on p. 93 is clearly one in which a paroxysm of tachycardia has supervened in a case of bundle branch block, and is not, as is here stated, a case of ventricular tachycardia. Again, the oscillations in Fig. 25 are obviously due to circus movement and not to tremor of the somatic muscles, in which the deflexions are neither so regular nor so slow. The statement on page 6 that the Q.S.U. waves may be relegated to unusual conditions is misleading, while the new terms "incidental" and "fundamental" as applied to extrasystoles scarcely justify their application. The best chapter is that dealing with the electrocardiographic findings in coronary arterial disease; but taken as a whole the book strikes us as hardly suitable either for the beginner or the expert.

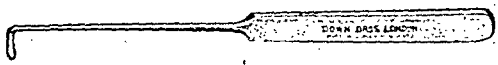
Indian Journal of Medical Research.

THIS issue (Vol. XVIII., No. 2, October, 1930) comprises 366 pages, a special feature being the introduction of a purely clinical paper on Heart Disease in the Punjab by T. A. Hughes and Mohammad Yusuf; 24 out of 35 cases showed valvular disease, 13 being instances of mitral stenosis, which is interesting because rheumatic fever is generally regarded as rare in the tropics.—S. L. Sarkar describes some peculiarities in malaria temperature charts, and concludes that in hyper-endemic areas malaria is more resistant to quinine treatment and more liable to relapse.—C. Strickland and K. L. Chowdhury report on malaria and black-water fever in Naomundi, while T. A. Hughes and D. L. Shrivastava continue their studies on the enlarged malarial spleen.—W. J. Webster also reports further observations on rat fleas and the transmission of plague, and finds that the three Indian rodent xenopsylla readily feed on man in the absence of a more suitable host, even at temperatures of over 80° F. Hot weather was least favourable to *X. braziliensis*, a cold season least suitable to *X. astia*, whilst *X. cheopis* thrived at all periods. In conjunction with G. D. Chitre the conclusion was reached that the chief factor in the spread of plague in Bombay is connected with the blocking phenomenon. The flea species factor is important in so far as a higher *astia* index is required for the progress of plague than will suffice in the case of *cheopis* or *braziliensis*.—A. Vasudevan and N. Seshadrinathan report on some atypical cases of mycetoma, the special features being the peculiar situation and macroscopical appearance of the lesions.—T. A. Hughes and his colleagues record further observations on the serum calcium and plasma cholesterol in health and disease. They confirm their past findings that serum calcium in normal residents of the Punjab is higher than for temperate climates. The blood chemistry of osteomalacia is also considered.—R. McCarrison continues his researches on lymphadenoid goitre in rats, the size of the thyroid gland of albinos being specially considered, while Sankaran reports on the iodine content of the normal thyroid in the latter animals. The effects of high protein diet on this gland are also considered by McCarrison, who finds the high concentration of animal protein in the diet does not cause thyroid enlargement in grown rats, the main factor being deficiency in fat-soluble vitamins.—S. Ranganathan contributes two papers on the composition of urinary calculi, the nuclei of which are shown to be mainly composed of uric acid or urates.—Lucy Wills and M. M. Mehta record the production of pernicious anæmia (bartonella anæmia) in intact albino rats by feeding on diets deficient in vitamins A and C. Their experimental results show that it is possible by diet to produce a severe megalocytic anæmia, especially in female animals. In reality, however, the condition is really a bartonella anæmia occurring in intact animals. *Bartonella muris* was readily demonstrated in the red cells, whilst splenectomy also showed that all their Coonoor stock was infected with it.—P. A. Maplestone has studied the seasonal variation in hookworm in India, and V. T. Korke writes on filaria prophylaxis, the first step being, in his opinion, to keep the cement drains of cesspool systems in strict sanitary order. *Culex fatigans* was found to breed in all systems of drainage under winter and summer conditions.—The number closes with a note by Seymour Sewell on *Cercaria anomala* Rao.

NEW INVENTIONS

A TONSIL-EXPLORING HOOK AND A TONGUE DEPRESSOR.

I HAVE found the instruments herewith illustrated of great use in the investigation and after-treatment of tonsil cases. The *tonsil-exploring hook* is of a convenient size and shape for lifting the anterior faucial pillar off the tonsil, for raising the tonsil from the posterior pillar, for pressing upon the tonsil to squeeze out secretion, and for investigating crypts. The instrument is made in stainless steel. and being somewhat hollowed and rounded, admirably serves its purposes without causing injury.



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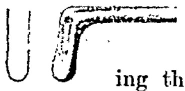
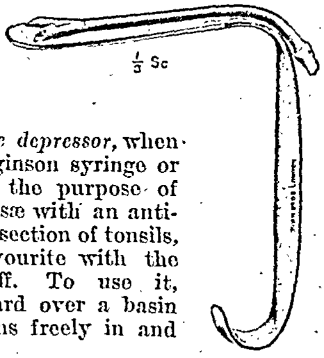

FULL SIZE

The *irrigating tongue depressor*, when connected with a Higginson syringe or irrigating can, serves the purpose of douching the tonsil fossæ with an antiseptic solution after dissection of tonsils, and has proved a favourite with the hospital nursing staff. To use it, the patient sits forward over a basin so that the lotion runs freely in and out of the mouth.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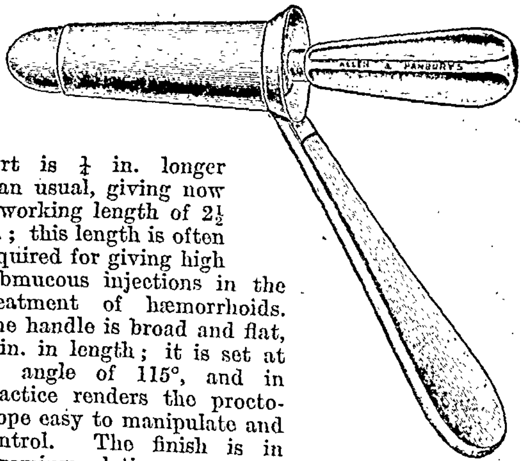
The instruments have been made for me by Messrs. Down Bros., St. Thomas's-street, London, S.E.

Clifton. C. OSMOND BODMAN, F.R.C.S.E.

A MODIFIED KELLY PROCTOSCOPE.

THE instrument here illustrated is a modification of the well-known Kelly proctoscope. The tubular part is ½ in. longer than usual, giving now a working length of 2½ in.; this length is often required for giving high submucous injections in the treatment of hæmorrhoids. The handle is broad and flat, 5 in. in length; it is set at an angle of 115°, and in practice renders the proctoscope easy to manipulate and control. The finish is in chromium plating.



The instrument has been made at my suggestion by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W.

W. B. GABRIEL, M.S. Lond., F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, JANUARY 10, 1931.

THE RISKS OF VACCINATION.

THE Committee on Vaccination, appointed jointly in 1926 by the Minister of Health and the Medical Research Council—now known briefly as the Rolleston Committee—has issued a further report,[1] in continuation of Part II. of the report of Feb., 1928, in which the nature and occurrence of acute disease of the central nervous system after vaccination was studied. This earlier report[2] made a series of ten recommendations of which the first four on the technique of vaccination were implemented by the Vaccination Order of 1929 and came into force in October of that year. Since that time a trial has been made of vaccination in *one insertion with a minimum of trauma,* in place of the previously advocated four insertions, and it is rather striking that among the 90 cases of nervous disease set out in the present report, only two are known to have been vaccinated by the one-insertion method. Steps are also being taken, we understand, to comply with recommendation (7) suggesting a revision of the syllabus of instruction of medical students in the light of present-day knowledge of vaccination. The next recommendation was to inquire if it might be possible to increase the dilution of vaccine lymph without impairing its efficacy, and evidence is submitted that a skilled vaccinator using lymph diluted to one in a hundred may be successful in every case, the local reaction being much the same as with a one in five dilution, but with less indication of systemic reaction. The bulk of the report is occupied with an account of the 90 cases of post-vaccinal nervous disease brought to notice since the earlier report, the available clinical information being correlated with post-mortem findings in the 25 fatal authenticated cases. In an appendix is a translation of Sir GEORGE BUCHANAN's valuable report to the Office International which gives the experience of the Netherlands and England up to May of last year. A summary of this appendix appears on p. 97 of our present issue. From this it appears that in the recent large-scale attempt to protect the population of Holland from imported variola encephalitis appeared in the proportion of one in 3437 *children vaccinated between 1 and 2 years,* and one in 815 vaccinated from 6 to 11 years. While all this spadework was necessary to make the story complete, it is admitted that its results do not add materially to our knowledge of post-vaccinal nervous disease. One small item of new knowledge is that the symmetry which usually characterises the distribution of the lesions may be *absent, as in one case set out they were limited to one side of the spinal cord. Speaking generally,* the claim that the lesions of post-vaccinal encephalitis are similar to, if not identical with, those of the nervous affections observed after certain other acute infections, notably the exanthems, has received further support, although attempts made at the Lister Institute to obtain some evidence of the presence of a virus transmissible to rabbits and monkeys have not met with success. No condition simulating post-vaccinal nervous disease has so far been produced by inoculation of monkeys with this material either by the intracerebral, intramuscular, or intravenous routes. Nor was it possible to confirm BLAXALL's demonstration (1923) of the presence of vaccinia virus in the brains of these monkeys.

Attention is called to the experience of J. HEKMAN during the vaccination campaign in Holland. Following, although independent of SIR THOMAS HORDER's use of convalescent serum,[3] it occurred to HEKMAN to attempt to reduce the toxic effects of vaccinia in children by giving serum of their recently vaccinated parents. His success induced E. PASCHEN *to organise the collection and preservation* of sera from recently vaccinated young hospital nurses. Whether or not we are able completely to accept the view of GRÜNEBERG and HEKMAN that vaccinia is alone responsible for the encephalitic sequelæ, their results supply a powerful argument for the use of human antivaccinial serum in these cases at the earliest possible moment. It is now just a matter of chance whether this remedy happens to be available, and the Rolleston Committee suggest that the example of Prof. PASCHEN might be followed by the authorities of large residential institutions, particularly those which require recent vaccination as a condition of admission. In default of human serum Prof. LEDINGHAM and Dr. PETRIE have prepared an antivaccinial serum by immunisation of a horse, and this is now available for trial.

Although, as we have said, the report may contain no substantial addition to our knowledge of the pathology of post-vaccinal nervous disease, it should be widely read for the adequate picture which it gives of an acute nervous disease with a *mortality-rate* of nearly 50 per cent. continuing intermittently to appear, now here and now there, with manifest disregard to the incidence of any known factor other than vaccinia. The quality of the lymph does not appear to have been a determining factor, for in the Netherlands epidemic the lymph used had come from Paris, Hamburg, Vienna, Berne, and other European centres, and even from *Japan and the* Dutch East Indies. In our own country the use of every variety of lymph has at one time or another been followed by nervous disease. The disease is associated with characteristic changes in the brain and cord similar to those found in acute nervous conditions following influenza, measles, and variola. Like them it is dependent on a precedent infection, but *differs in that it follows the infection with great* regularity within a definite limit of time. There is nothing in the circumstances of the cases described in the present report which has not its parallel in previous experience. The age-incidence remains as before. Two-thirds of the patients were children of school age; the youngest child, whose death was certified as due to acute anterior poliomyelitis, was aged 1 year and 8 months. No clinical features not previously observed have been met with; but it may not be without significance that in two cases there was congenital absence of a kidney, and a third had chronic ulceration of bladder with degenerative changes in the kidneys.

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[1] Ministry of Health. Vaccination. Further Report of the Committee. Observations on the Epidemiology and the Clinical and Pathological Character of Post-vaccinal Nervous Disease, with Certain Collateral Papers. Cmd. 3738. Pp. 114. 2*s.* 6*d.*

[2] See THE LANCET, 1928, ii., 233.

[3] THE LANCET, 1929, i., 1301; 1930, ii., 307.

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LOW GASTRIC ACIDITY.

OPINION on the significance of the gastric acidity has shown considerable changes of late years. When fractional test-meals were introduced there was a tendency to attribute most "dyspeptic" symptoms and many disorders of the stomach to alterations in gastric secretion. A reaction then followed in which the importance of muscular tone and peristalsis in the causation of pain, hunger, and other sensations was more clearly appreciated. Even now we are at least partly ignorant of the precise function of the hydrochloric acid of the stomach. It is certainly a valuable bactericide which helps to protect the alimentary tract from swallowed organisms, but its remarkable variations in health and disease suggest that in other ways it may be more intimately concerned with the functions of the body.

In our present issue Dr. J. F. WILKINSON and Dr. T. H. OLIVER call attention to certain clinical conditions associated with an absence or deficiency of hydrochloric acid in the stomach. The constancy of achlorhydria in pernicious anæmia and subacute combined degeneration of the cord has, of course, long been recognised, and it may be an essential factor in their causation. The fact that it does not disappear, although in other respects the pernicious anæmia may be cured and the blood count become normal, suggests that the achlorhydria is at least a primary if not an inherent or constitutional deficiency. That it is actually often a hereditary abnormality is well known and is exemplified by a family described by WILKINSON and OLIVER in which it was present in three generations examined. It is, however, a frequent finding unassociated with anæmia, when it is commonly secondary or acquired as, for example, from chronic gastritis. Over 100 years ago BROUSSAIS, on the strength of his autopsy findings, considered gastritis to be the cause of almost every variety of pathological condition—even measles. Nowadays many authorities believe that gastric ulceration and often gastric carcinoma follow long-standing gastritis, and there may certainly be a low acidity in gastric ulcer patients, which actually increases after treatment and cure of the ulcer. Low or absent acidity is also a common, though by no means constant, finding in carcinoma of the stomach. The causes of gastritis—and thus of many cases of achlorhydria—may be partly exogenous, and KNUD FABER[1] thinks that achylia is always the result of a preceding gastritis. This, he suggests, may often be due to a deep-seated hæmatogenous infection in childhood, when an apparent anacidity is common. Thus it is found especially in such acute infections as influenza, tonsillitis, diphtheria, and the like, and may perhaps persist in later life. The relative frequency of constitutional and acquired achlorhydria is hard to estimate; its significance, therefore, as evidence of gastritis, is even more so. In either case the part it may play in the causation of symptoms and disease cannot easily be determined. In some cases achlorhydria is associated with diarrhœa, and in this type the condition is often familial. Such lienteric diarrhœa has long been noticed and is discussed by WILKINSON and OLIVER, who report 53 cases in which it formed part of an "achlorhydric syndrome," usually with accompanying neurosis. Typical lienteric diarrhœa, in which the bowels are opened almost immediately after every meal, is probably due to rapid emptying of the stomach and irritation of the gut by food inadequately prepared by the stomach, and similar conditions may certainly follow gastro-enterostomy. But it is by no means common, and the syndrome described by WILKINSON and OLIVER is not so easily recognisable clinically; it may even be found (they admit) with hyperacidity, and a test-meal is therefore essential in the diagnosis. Of 100 cases which they have studied 76 showed achylia or hypo-acidity, and of these 76, 43 had gastro-intestinal symptoms and diarrhœa. Of 100 normal patients (over 60 years of age) studied recently by D. T. DAVIES and T. G. I. JAMES,[2] 44 showed diminished or absent free hydrochloric acid, but gastro-intestinal symptoms were apparently absent. In DAVIES and JAMES's series no case showed an absence of pepsin, whereas a number of WILKINSON and OLIVER's patients showed deficient peptic activity. It is thus obvious that apparent achlorhydria may be commonly present without obvious ill-effects. The exact method used to obtain the gastric juice is clearly of importance, and the use of histamine has shown that many "achlorhydrias" are, in fact, false achlorhydrias in which acid secretion follows its injection. Fear and pain alone may inhibit the acid secretion, and the excess of women over men in WILKINSON and OLIVER's cases suggests that such inhibition may have played some part in the results.

The frequency of gastric anacidity in certain clinical conditions is more than coincidence—e.g., in rheumatoid arthritis, in pulmonary tuberculosis, in acne rosacea and some other skin diseases, in asthma, and in chronic cholecystitis and appendicitis. On the other hand, many such cases show a high degree of acidity, so that achlorhydria can hardly be a direct ætiological factor. As a secondary secretory abnormality its correction might therefore be expected to produce but little benefit. In lienteric diarrhœa the value of hydrochloric acid and pepsin in treatment is undoubted. In other conditions achlorhydria may well be the result of gastritis, and if so it would be rational to treat, if possible, the underlying disorder in the hope of re-educating the stomach to secrete its own acid—as has lately been done by A. F. HURST[3] in a case of pernicious anæmia itself. None the less, nutrition may well be improved by the temporary use of acid in suitable cases, and possibly WILKINSON and OLIVER's unusually successful results are partly attributable to the high dosage they have employed.

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[1] THE LANCET, 1927, ii., 901.

[2] Ibid., 1930, ii., 899.

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THE PSYCHOLOGY OF ACCIDENT NEUROSES.

UNDER the name of *Unfallsneurosen*, or accident neuroses, Dr. MAX EYRICH[4] discusses what we are accustomed to call traumatic neurasthenias. He emphasises the need for separating these psychically determined conditions from organic injuries of the nervous system, the difficulty of the task of distinguishing them being no mark of relationship between the two groups. He notes that the mass problem of the accident neuroses is a post-war phenomenon and, whilst attaching great importance to the influence of compensation, warns against the too easy explanation that the neurotic seizes upon an accident with the simple and conscious aim of obtaining that benefit. He explains that the economic position of the modern worker is insecure, and after an accident it is the threat not of personal injury but of economic disability that brings in its train an anxiety reaction about the future; if this is mishandled at its onset the self-preservation instincts replace ordinary judgments, the road to compensation shows itself, and there begins an interest in the demonstration of occupational unfitness. The need for early recognition and handling of these tendencies is obvious, and Dr. EYRICH believes it is a mistaken view of the situation that deduces a claim to compensation from the presence of nervous symptoms after an accident. The present-day attitude of the medical referee should be changed, for without the prospect of compensation a considerable reduction of these neuroses may be expected.

Anyone familiar with the hopeless wrecks who draw compensation for traumatic neurasthenia years after an accident in which physical injuries were negligible must grant some validity to Dr. EYRICH's arguments and conclusions. These conditions arise when financial responsibility for an accident can be thrown upon someone else; they rarely occur when the victim must bear the brunt of it himself, and it is an old observation that traumatic neurasthenia never follows accidents in the hunting field. If compensation for these disorders could be stopped once and for all, then a great deal of mental deterioration with its associated suffering would be prevented. Probably, on balance, more benefit than injustice would result, but the situation is too complicated for such a simple remedy to be applicable, some of its complications being an inheritance from the days before mechanistic views had been modified by a knowledge of psychopathology. In our last issue, in the first of a series of lectures on that subject, Dr. E. G. HOWE showed the necessity of clearing away misleading labels, of which there is none more misleading than "traumatic neurasthenia." The conception involved is of an actual injury to the nervous system, and in this the patient and his friends firmly believe, effective treatment thus being made almost impossible. Worse than this, the conception is so widely held that he would be a brave witness who faced a jury and propounded the opinions enunciated by Dr. EYRICH, even though they might be in the best interest of the patient, who is usually quite honest in his declaration that he would prefer health to compensation. Another element in the situation is the common failure to diagnose the condition before it is well established, and for this we must blame the neglect of the subject in our curriculum.

Dr. EYRICH is partly right in his statement that the nature of the bodily or mental symptoms is immaterial to the general principle. Accident neuroses differ in no way from the minor psychoses that occur apart from accidents, except in the influence of compensation. They are rarely seen by the psychopathologist, but are sometimes found to be exacerbations of previously existing conditions or developments of an unchecked hysterical symptom that has passed into a state of severe anxiety. All types of people suffer from them, and the over-sensitive worrier, crying out for treatment he cannot obtain, is labelled "traumatic neurasthenia" in company with the slacker who is happy in his solution of the problem of how to live without work.

The occupational offer the same difficulties as the accident neuroses. The old conception of the occupational neuroses as an independent symptom bringing "neurasthenia" in its train, is giving way to the belief that the eponymous symptom is an excrescence upon an underlying mental state, its form being determined by the occupation. The disabling symptoms of miners' nystagmus, whatever may be the cause of the oscillation of the eyeballs, are predominantly those of the minor psychoses; compensation, in the absence of recognition of this fact, has been accompanied by a thirty-fold increase in cost in the last 20 years. In Belgium, with disability pay for a limited period, the disability rarely lasts beyond that period; in this country there is no limit to the one or the other and lifelong disability is not unknown. Yet the disability is real, and in a well-established case the irrevocable stoppage of disability pay would leave the patient in a parlous state and with little chance of recovery. The minor psychoses arise with and without compensation, and the present evil is that in the cases here discussed the sufferers receive, and are taught to look for, compensation rather than treatment. Thus the recommendations of Dr. EYRICH are an effort to retrace false steps that have led to disastrous results; yet the remedy is to be found in a fuller understanding of the nature of the conditions, and the handling of each case in the light of that understanding, rather than in a drastic reform that, whilst being the salvation of some people, may be an injustice to others.

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[3] Guy's Hosp. Rep., 1930, lxxx., 407.

[4] Deut. med. Woch., Dec. 12th, 1930, p. 2129.

ANNOTATIONS

THE NEW YEAR HONOURS.

THE following is a list of the New Year Honours as far as they directly relate to the medical profession, issued after we had gone to press last week. No medical man has been raised to the House of Lords, but Sir John Rose Bradford, the President of the Royal College of Physicians of London, whose claim to distinction for his long and eminent services needs no emphasis, is created a Baronet.

K.C.B. (Military Division).

Lieut.-General Harold Ben Fawcus, C.M.G., D.S.O., K.H.P., Director-General, A.M.S.

C.B. (Military Division).

Major-General Lawrence Humphry, V.H.S., Deputy Director of Medical Services, Western Command, India.

C.H.

Miss Jane Harriet Walker, M.D., founder of the East Anglian Sanatorium, Nayland, and first President of the Medical Women's Federation.

C.I.E.

Lieut.-Colonel Hugh William Acton, I.M.S., Director of the School of Tropical Medicine and Hygiene, Calcutta.

Major Eric Edward Doyle, D.S.O., I.M.S., Inspector-General of Prisons, Bombay.

Lieut.-Colonel Ian MacPherson Macrae, O.B.E., I.M.S., Inspector-General of Prisons, Bihar and Orissa.

Lieut. Colonel Jasper Robert Joly Tyrrell, I.M.S., Chief Medical Officer in Central India.

K.C.V.O.

Ashley Watson Mackintosh, M.D., Honorary Physician to H.M. Household in Scotland; Emeritus Professor of Medicine in the University of Aberdeen.

M.V.O.

Marcus Antonius Johnston De Lavis-Trafford, O.B.E., M.D., Physician-in-Ordinary to the Duke of Connaught.

C.B.E.

Miss Louisa Martindale, M.D., J.P., President of the Medical Women's Federation.

Miss Agnes Catherine Scott, M.B., Chief Medical Officer and Secretary, Dufferin Funds.

Major Ernest Blechynden Waggett, D.S.O., M.B., Honorary Consultant in diseases of the throat, nose, and ear, Queen Alexandra Military Hospital.

O.B.E. (Civil Division).

Captain Hadji Dabiruddin Ahmad, I.A.R.O., Bengal Medical Service, Teacher of Anatomy, Campbell Medical School, Bengal.

Francis Edward Forward, F.R.C.S., Class I. Prison Medical Officer, Home Office.

Lieut.-Colonel John William McCoy, I.M.S. (retd.), Civil Surgeon and Superintendent of Jail, Sylhet, Assam.

Arthur Hutton McShine, M.D., nominated unofficial member of the Legislative Council of Trinidad and Tobago.

John Richard Cook Stephens, W.A.M.S., Medical Officer, Nigeria.

O.B.E. (Military Division).

Lieut.-Colonel Samuel George Steele Haughton, I.M.S., Officer Commanding Indian Military Hospital, Kohat, India.

M.B.E.

Homewell Lyngdoh, Assam Medical Service, Civil Surgeon, Nowgong, Assam.

Georges Alves Vincent, M.B., Medical Superintendent, St. Ann's Lunatic Asylum, Trinidad.

Knights Bachelor.

Ernest Gordon Graham-Little, M.D., for 15 years a member of the Senate of the University of London, whose work for the interest of the University is well known, is now the independent M.P. for the constituency.

James Smith Whitaker, M.D., is a senior medical officer of the Ministry of Health, a post to which he was appointed on the introduction of national insurance, having been previously medical secretary of the British Medical Association.

Ambrose Edgar Woodall, F.R.C.S., is the superintendent of the Manor House Hospital, Golders Green, and surgical specialist to the Ministry of Pensions.

Kaisar-i-Hind Medal (First Class).

Miss Mary Ronald Bisset, M.B., in charge of the Zenana Baptist Mission Hospital, Bhiwani, Punjab.

Graham Colville Ramsay, O.B.E., M.D., employed on malarial research work by the Ross Institute, Assam.

The following names will be recognised with pleasure in the list, as their owners in different capacities have worked in relation to medicine in one aspect or another. Sir Ernest Rutherford, who has been made a Peer, is chairman of the Advisory Council of the Committee of the Privy Council for Scientific and Industrial Research, and was recently President of the Royal Society. He is professor of experimental physics in the University of Cambridge, where his studies have revolutionised our conceptions of the universe. Dr. Frank Edward Smith, F.R.S., secretary of the Committee over which Sir Ernest Rutherford presides, has received a K.C.B. Mr. Arthur William Hill, F.R.S., director of the Royal Botanic Gardens, Kew, has been promoted K.C.M.G. The C.B.E. has been conferred upon Prof. Sidney Russ, professor of physics, whose work at the Middlesex Hospital in connexion with radium is familiar to all our readers. The O.B.E. has been conferred upon Mr. C. C. Ellis, Senior General Inspector of the Department of Health for Scotland, Captain W. M. Ablewhite, steward of Bethlem Royal Hospital, Mr. J. L. Worsfold, clerk to the Royal Hospitals of Bridewell and Bethlem, and Mr. P. L. Burnett, a devoted worker for the Seamen's Hospital Society. A similar honour is conferred upon Miss T. M. Morton, the organiser of children's care work under the London County Council, while the M.B.E. is received by Miss H. A. Alsop, lately matron, St. Mary Abbot's Hospital. The open-handed contributor to charity who concealed his identity under the pseudonym of "Audax" comes out into the open as Mr. George Roberts, and has been created a baronet.

THE MECHANISM OF SWALLOWING.

THE anatomist of old taught both the structure and the function of the organs and parts of the human body. When the study of function was taken from him by the physiologist, anatomy tended to become a dead science and physiology to go so far into the details of biochemistry and theory that it lost touch with the simple working of the parts. Between the anatomist and the physiologist the radiologist appears, to offer a living functional anatomy. No better example of his services could be offered than Dr. A. E. Barclay's study[1] of the mechanism of normal swallowing, which completely reverses the text-book accounts. What actually happens after the mouth is closed and the nose shut off by the soft palate is that the larynx is raised—as is well known—but its upper part is obliterated not by the epiglottis, which remains upright against the posterior pharyngeal wall, but by the mucous membrane of the laryngeal pharynx, jammed into place by the back of the tongue, which is "swallowed" as far down as the false vocal cords. The passage of the bolus of food is not a peristalsis or a piston stroke, but a suction. The laryngeal pharynx is pulled up behind the larynx towards the mouth as a tubular receptacle, which Dr. Barclay aptly likens to the open beak of the nestling pushed up out of the nest. The suction necessary to pull the bolus from the tongue into the laryngeal pharynx is obtained by a momentary obliteration of the pharynx. For just about one-twentieth of a second before the food passes over it, the pharynx is turned into a potential space, being pushed against the vertebral column behind it by the upward movement of the larynx and the pressure of the back of the tongue in the upper part of the larynx. After this obliteration a negative pressure is, of course, present, and the food falls down the laryngeal pharynx in the shape of a drop with a rounded lower border and a long drawn-out tail like a comet. As soon as the laryngeal pharynx receives the bolus it drops back into its normal position and so opens up the larynx. The suction effect probably lasts until the food reaches the junction of the upper and middle thirds of the œsophagus. Here suggestions of peristalsis are seen on the screen; here the muscle changes from voluntary to involuntary; here the nerve-supply alters; here the muscularis mucosæ becomes increasingly prominent, and here middle-sized foreign bodies almost always stick. Gravity seems to play no part in the passage of the food, for a man can swallow in any position.

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[1] Brit. Jour. Radiol., 1930, iii., 534.

These observations raise many questions which Dr. Barclay fully appreciates. Nevertheless, as he says, the radiologist can only record observed facts and leave it to others to complete his story.

MALARIA IN DRUG ADDICTS.

THE therapeutic inoculation of malaria in general paralysis and allied conditions has shown the readiness of the subtertian (or malignant) malaria parasite to multiply in the unprotected human body and produce virulent and rapidly fatal forms of the disease. Sometimes inoculation has been accidental. Thus, C. M. Wenyon[1] relates that a number of men were unwittingly infected during salvarsan injections. Though a sterile needle was used for each man, the tubing and glass window were not disinfected between injections, and infected blood corpuscles were thus inoculated into ten successive men, producing attacks of malignant tertian malaria which were fatal in some of the cases. Major A. G. Biggam,[2] professor of clinical medicine in the Egyptian University, Cairo, finds that similar severe and often fatal infections arise from intravenous administration of heroin by depraved addicts in Egypt. The drug is obtained almost exclusively in the Bulac District of Cairo and is administered by a gang quite without any special medical knowledge. The solution of heroin is made up in bulk and administered by syringing, blood being drawn up into the syringe before making each injection so as to ensure that the needle is in position. No sterilisation of the needle is attempted between the injections. The appearance of the veins is characteristic; in some cases there are scars along the superficial veins of the forearm, with dark pigmentation resulting from repeated punctures. Some cases in hospital give a history of as many as three injections in a day. In no other country, Major Biggam thinks, is heroin taken intravenously by drug addicts, and it is probably the success of intravenous injection of tartar emetic in schistosomiasis that has popularised this method of medication in Egypt. By the time they reach hospital most of the addicts are in a wretched condition, very emaciated and mentally unstable. During April, 1929, some of them showed irregular temperatures, and on further investigation, it was discovered that they had a very heavy infection of crescents, or sometimes rings, of the subtertian parasite, which probably accounted for their dysenteric symptoms. In one case subtertian crescents were demonstrated in scrapings from the sigmoid colon. The patients with subtertian malaria were all inhabitants of Cairo where subtertian malaria as a natural infection is unknown. Two possible explanations of this infection are possible: either the heroin lowered their resistance and so made them more susceptible to the bites of infected mosquitoes, or malaria was transmitted to them during the process of injection. The second explanation is by far the most probable. The syringes seized by the police were examined by Dr. A. L. Urquhart, professor of pathology, but though all were found to contain various amounts of decomposing blood clot, no malaria parasites could be demonstrated in this unpromising material. Major Biggam gives details of ten cases, one of which was fatal.

AN INQUIRY INTO THE CAUSES OF MENTAL DEFICIENCY.

FOR some time the Royal Eastern Counties' Institution for the Mentally Defective, at Colchester, has been desirous of making an inquiry into the causation of mental deficiency. This interest was stimulated, perhaps even initiated, by the generous gift of Lady and Miss Darwin, who founded the Darwin Trust and endowed it with an income of about £275 a year. The possibility of research was ensured when the Medical Research Council agreed to contribute nearly half of the salaries and expenses of a full-time research medical officer and a social investigator. These appointments have now been made and work will begin this month. The officer is Dr. Lionel S. Penrose, lately research student at the Cardiff City Mental Hospital, and the investigator is Miss Newlyn, who has been working for the last six years with the Devonshire Voluntary Association for Mental Welfare. The first piece of research is to be a minute inquiry into the physical and mental characteristics, the home environment, and the family histories of the 1400 patients in the Colchester institution.

HYGIENE IN PRIVATE SCHOOLS.

THE President of the Board of Education recently announced the appointment of a departmental committee to consider the relation of education authorities to schools not in receipt of grants from public funds, and what legislative or other changes are desirable in order to secure for the children attending them an adequate education under suitable conditions. The last three words emphasise the importance of the inquiry from a medical standpoint, and the committee includes the names of two medical men—Dr. O. M. Holden, medical officer of health for Croydon, and Dr. Alfred Salter, M.P. The position as it stands is admittedly unsatisfactory, for there are private schools inefficient on the scholastic side, housed in defective buildings, and devoid of medical supervision. To make matters worse, some of the children attending them have been deemed unfit, by reason of mental or physical defect, to attend ordinary elementary schools, and therefore need special care. In practice, all that the local education authority can do is to prosecute the parents for not giving their children an efficient education—a procedure adopted only in extreme cases or where the premises are utterly unfit. But the term "schools not in receipt of grants from public funds" is so wide as to include our public schools, which have their own zealous medical officers, who have an association where the doctors of great public schools discuss matters of common interest with medical officers of elementary schools. Leaving aside such great institutions, it may be said that private schools in general suffer by comparison with State-aided schools in three ways: (1) the buildings may have sanitary defects, and are subject to no special medical inspection; (2) there is no school medical inspection of the children; (3) there is no scheme of treatment and none of the facilities for dealing with exceptional children that are provided by most public education authorities. Further, the teachers in private schools have rarely had the specialised training, including a knowledge of child psychology and hygiene, which come into the curriculum of the training colleges for teachers in elementary schools. Now the buildings could be subjected to inspection by the officers of the school medical service in coöperation with those of the public health authority. In the better private schools medical inspection is being more and more adopted by individual schemes, and in cases where nothing of the kind is contemplated it might be necessary to insist upon its establishment as an alternative to the work being done by the school medical service of the local authority. In some cases it might be convenient to afford children of private schools the facilities for treatment and special care maintained by the local authority, but for the most part the parents would no doubt prefer to arrange privately for medical and convalescent care. Even so the private schools would remain at a slight disadvantage, but not such as to inflict serious injury on the children. It is a matter of experience that the introduction of the doctor into a school, whether officially or by private arrangement, has a beneficial influence on the mental as well as the physical atmosphere of school life.

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[1] Protozoology, London, 1926, vol. ii., p. 955.

[2] Trans. Roy. Soc. Trop. Med. and Hyg., 1929, xxiii., 147.

THE ANATOMY OF LEONARDO.

Leonardo da Vinci, painter, sculptor, architect, engineer and anatomist, occupies a commanding place in the world's history, but while his pre-eminence is unquestioned in so many directions, his achievements as anatomist have often been the subject of discussion, how far he was wholly original and how far he derived from previous knowledge being matters not easy to settle. The vicissitudes of his vast stores of notebooks and sketches, recording his multifarious studies form an interesting story which Prof. McMurrich[1] has set out now in a fascinating work on the master as an anatomist. A critical estimate of Leonardo's place on the roll of fame is directed towards his position as a pioneer, but a historical background is supplied with learning and discrimination, so that the part played by Leonardo in that period of intellectual awakening which he adorned becomes defined. As all his manuscripts dealing with anatomy are now accessible in facsimile, the personal achievements can be compared with those of his successors. There is no call, it seems, to check Leonardo's work as an anatomist with those who preceded him, for his dependence upon Avicenna and Mondino is unconcealed. But how far certain of those who followed Leonardo, notably the great Vesalius, derived help through access to Leonardo's notes, forgetting to acknowledge the inspiration, may not be wholly settled. On the other hand, certain of the claims made in Leonardo's behalf in respect of priority, or of actual authorship, cannot be substantiated. Prof. McMurrich, while sharing the admiration of the world for Leonardo's genius, is no indiscriminate eulogist; on the contrary, he brings out clearly the inconsistencies and errors which are revealed in his scientific work, and which are explained by the position of knowledge in the fifteenth century, when the new learning was barely emancipating itself from the grip of tradition. After a review of the position of anatomical knowledge during the long and sterile period between Galen and Leonardo, and an inquiry into the possible literary sources of Leonardo's anatomical knowledge, we have a series of chapters in which Leonardo's special researches into the anatomy of the various systems are set out. These chapters are in many instances beautifully illustrated, and especially is that the case in the interesting sections dealing with the heart and blood vessels. The main part of Leonardo's knowledge was derived from the autopsies which he conducted, and the pictures, not only in their charm but in their accuracy, show a wonderful advance on any anatomical drawings that had been made previously. At the same time they illustrate very well the preponderating force of tradition as, side by side with exquisite representations of what he must actually have seen, we have drawings perpetuating old theories, the errors apparently being introduced in support of theories themselves erroneous.

This is a loving study, and it is not surprising to learn that Prof. McMurrich found its production to be a heavy toll for some years upon all the time that he could spare from his duties at the University of Toronto. The volume is produced at the instance of the Carnegie Institution of Washington.

HUMANE SLAUGHTER.

In a recent Chadwick lecture, arranged by th Model Abattoir Society, Sir James Douglas dea with the humanitarian clauses of the model by-law issued, in 1915, largely as a result of the evidenc brought before the Admiralty Committee on human slaughtering of animals shortly before. These by laws, which replaced the revision of 1909 and ar probably not as well known as they should be, ru thus:

> "Every person engaged in a slaughter-house in drivin or bringing any animal to the place of slaughter shall (c avoid, as far as practicable, driving or bringing the anima over any ground which is likely to cause the animal to slip o fall and (*b*) otherwise adopt such methods and precaution as will prevent the infliction upon the animal of unnecessar suffering or pain. A person shall not, in a slaughter-hous (1) slaughter or cause to be slaughtered any animal, or dres or cause to be dressed the carcase of any animal, in th view of another animal.
>
> "An occupier of a slaughter-house shall not cause o allow any blood or other refuse to flow from the slaughter house so as to be within the sight or (so far as it is practicabl to avoid it) within the smell of any animal in the slaughter house and he shall not cause or allow any blood or othe refuse to be deposited in the waiting pens or lairs."

There is also a clause in the Protection of Animals Ac (1911) which runs:

> "Nothing in this section shall render illegal any ac lawfully done under the Cruelty to Animals Act, 1876, o shall apply—
>
> (*a*) to the commission or omission of any act in the cours of the destruction, or the preparation for destruction, o any animal as food for mankind unless such destruction o

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[1] Leonardo da Vinci, the Anatomist. By J. Playfair McMurrich. London: Baillière, Tindall and Cox. 1930. Pp. 265+xx. Price £1 1*s*.

> such preparation was accompanied by the infliction of unnecessary suffering . . . ."

and when interpreted in relation to its context means that no one must inflict unnecessary suffering on a food animal about to be slaughtered either before or during the act of slaughtering.

The Royal Society for the Prevention of Cruelty to Animals, with the help of their honorary adviser, Mr. R. O. P. Paddison, have been publishing what they regard to be the most humane way of killing. For each type of animal a different method is applicable. For beasts the most humane method is the use of the stunning-pen. In the majority of slaughter-houses the animal is led in on a halter or is drawn in by means of a rope passing through a ring fastened to the wall or a beam of the slaughter-house. This is not the best way; for if the beasts see ahead of them daylight or anything white, such as a whitewashed wall, they will walk quietly along a narrow passage into a pen where they may be stunned by mechanically operated instruments. The stunning-pen is a four-sided structure with high wooden sides too high for the animal to look over and a door which can be closed on the animal; the operator leans over the side of the pen. Directly the animal drops, a lever is pulled and the animal rolls out of the side of the pen, the floor lifting at the side opposite the opening. Once outside, it is bled. No blood, therefore, is present in the pen; the animal neither sees nor smells blood nor does it see any carcasses. Such a pen costs about £75, and it would be desirable to introduce one into the plan of every new slaughter-house to be erected. But existing slaughter-houses could be more cheaply altered to allow of more humane methods of bringing in beasts. The passage should be so wide at its entrance that the animal does not mind going in, and no animal should have to be turned round after reaching the slaughter-house. Flooring is of importance; at present concrete floors with ridges are in use, but these ridges wear down and are not renewed. It is not only the animals which dislike slipping about. Prof. Linton is experimenting with a layer of carborundum, ¼ inch thick, on a concrete basis. Progress, too, has been made in making the throwing of beasts more humane; the Islington Board of Schechita has decided to use the newly perfected form of the Weinberg casting machine at the City of London Slaughter-houses where some 30,000 to 40,000 beasts are slaughtered every year.

To kill pigs humanely a suitable pig-trap should be used. The R.S.P.C.A. recommend the Barrett-Smith or the closely similar Schermer type. In both the pig is walked from its waiting pen up a narrow run into the trap which has sloping sides and a floor made to sink. Thus caught the pig is stunned with a humane killer and bled after rolling out of the uplifted side of the trap. The usual way of steadying the pig by means of a loose rope over the upper jaw while he is shot may involve some dragging about. Better, but not so good as the trap, is for an expert slaughterman to walk into a pen full of pigs and shoot one after another, which he can do without causing them any obvious psychical distress. In the case of sheep we find perhaps the most urgent need for the application of the general aim that the waiting pen should be as close as possible to the spot chosen for slaughtering. Many of the ways of handling sheep are far from humane, but the following is unobjectionable. A sheep is brought in either by leading or lifting and placed gently on a crutch (a kind of cradle); the animal is then held in position by a helper and killed by sticking or by a humane killer. A better plan, which enables the operator to work quite alone, is for the slaughterer to bring in the sheep, to lay it gently on the crutch and to pass a strap over its body, one end being fixed to one side of the crutch and the other end attached to a handle at the opposite side. Calves are usually hoisted by a rope attached to both hind legs, and then slaughtered by sticking through the vessels of the neck and by pithing. A better plan is first to stun the animal with a humane killer and then to hoist and bleed.

MENTAL AFTER-CARE.

TO-DAY there is much talk of mental pre-care and mental after-care but, as Dr. G. W. James reminded the recent conference on mental welfare, this country has had a mental after-care organisation for over 50 years, and a very fine work it has carried on all that time. Without it many discharged patients would have been lost indeed. Dr. James told the story of the carpenter who came home to find that his precious bag of tools, his only hope of livelihood and return to normal work, had been pawned during his absence; and of the young man found wandering in the streets of Cardiff, having no memory of what had happened to him since he started out on an errand in an American city months before. Many patients can be released from mental institutions before they are ready for the stress of home life; for these the Association arranges convalescent care in cottage homes. For others it finds work—often no easy matter, for suspicion of the ex-mental patient dies hard among employers—or clothing, or provides a sympathetic friend whose interest will make bearable an otherwise intolerable or lonely environment. It is distressing to hear that the Association is in sore need of funds to carry on this work. Over 2000 cases were helped last year and the certified administrative expenses were less than 8 per cent. Applications for aid are becoming ever more pressing and more numerous. It is to be hoped that the appeal for funds will meet an immediate and generous response. The secretary is Miss E. D Vickers, Church House, Westminster, S.W. 1.

THE VITAMIN CONTENT OF COD-LIVER OILS.

THE latest publication of the Empire Marketing Board is a report[1] in reply to a recommendation from the Imperial Economic Committee (contained in a report dealing with our fish supply) that the nature of the variations in the vitamin content of cod-liver oils produced by fish from various sources should be the subject of inquiry. The underlying causes of such variations were subjected to research, and the methods of manufacture were studied, as well as the refining of the oil for medicinal purposes. Dr. Drummond Shiels, Chairman of the Research Grants Committee, in a prefatory note says that the research work carried out has demonstrated beyond doubt the unrivalled medicinal value of the oils produced in Scotland and Newfoundland, which view makes good patriotic reading, expressed in a rather unusual place. The conclusions of the report have been published for consideration, and it is unfair to the well-known experts to make their results depend, for public estimate, upon a preface. But the general findings of the investigators support the belief that the vitamin value of the oil yielded by the cod caught in Newfoundland waters is the highest, next in order of merit coming the oils of Icelandic and Scottish origin, those from Norway being the least potent. The colorimetric experiments, however, which support this view are not accepted everywhere. The report deserves careful study; the stages of the investigation are clearly set out, and the reasons for the expressed opinions can be readily grasped, while references are given to discussions upon the relative values of the different oils from which opposing views can be ascertained. The general scheme of the experimental observations undertaken in collecting material for the report is an impartial one and the methods for the assay of vitamin potency were carried out with rigid biological tests. In other sections the technical production of cod-liver oil is set out, the report closing with notes on cod-liver oil for human use and animal food.

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[1] The Relative Value of Cod-liver Oils from Various Sources. By Prof. J. C. Drummond, D.Sc., and Prof. T. P. Hilditch, D.Sc. 1930. H.M. Stationery Office. 1s. net.

THE MEANING OF SACRIFICE.

THE wide spread of identical rites and customs for which no rational explanation can easily be given can be considered as the result of diffusion from some common centre or as separate developments of innate human tendencies. The second view is adopted by psycho-analysts, though disputed by some anthropologists, and Freud himself has accounted for the customs of totemism and taboo as derivatives of the primitive œdipus situation. In a thesis recently published[1] Dr. Money-Kyrle brings together descriptions of various rites of sacrifice as gleaned from classical mythology and accounts of primitive peoples, with a critical examination of previous anthropological theories, which attempted to reconstruct the conscious purpose that might have originally provoked those rites. He then attempts to reconstruct the unconscious purpose, and, granted the psycho-analytical premises that he lays down in the first part of the book, he has succeeded in giving to these strange practices a meaning that forms a consistent general picture. The book does not stand alone but represents a recognised mode of approach to anthropological problems; it can be read, however, as a self-contained unit, since the author makes clear those principles upon which his reconstructions are founded. Frazer's "Golden Bough," upon which he freely draws, will long remain our chief storehouse of knowledge of ancient and primitive rites; the interest originally aroused by Frazer's attempt to deduce from them a history of the human mind should receive a stimulus from this application of new views to an old problem.

SODIUM AMYTAL DURING LABOUR.

THE continuing desire for a safe and easily administered anæsthetic that could be widely used to ensure painless confinements has led to the trial of intravenous sodium amytal for the purpose. The results of 46 administrations are carefully recorded,[2] and one gets a clear impression that the desired anæsthetic is still to seek. Although in no instance was the labour prolonged or the mother's physical condition unfavourably affected, yet 11 patients showed extreme restlessness soon after administration of the drug, and restraint became necessary. One patient became maniacal. In all but six of the patients some inhalation anæsthetic was needed at the time of delivery or towards the end of the second stage. One-third of the babies were somewhat apnœic at birth; their condition was "apparently due to a torpidity of the respiratory centre, induced by the drug, and required stimulation to establish respiration." The conclusion is reached that the intravenous administration of sodium amytal during the latter half of the first stage and during the second stage of normal labour induces satisfactory amnesia in nine out of ten cases.

On p. 74 of our present issue we publish a report on basal hypnosis with nembutal, which is another of the barbiturate derivatives.

DECLINED.

A DAILY paper commented recently upon the fact that Mr. Alasdair Alpin Macgregor had received from Major A. G. Church a refusal to Mr. Macgregor's request for an opportunity to debate in a public hall the terms of a speech made by Major Church in Parliament. The speech in question was made in opposition to Lieut.-Commander Kenworthy's motion for leave to bring in a Bill to prevent the application of public money to vivisection experiments. The gist of Major Church's speech will be found in our columns (1930, ii., 1430), and the House refused leave to bring in the Bill. As Mr. Macgregor, in his invitation to a public debate, described Major Church as having spoken in the House "on behalf of the British Medical Association and its vested interests," being either ignorant of his appointment to the Medical Research Council or believing that the latter body and the B.M.A. were identical, it probably seemed to Major Church that this suggested debate would not take place in the presence of an unbiased audience. Such a conclusion was quite justifiable, and upon it the refusal to talk publicly to Mr. Macgregor followed naturally.

Dr. David Shannon will preside over the eighth British Congress of Obstetrics and Gynæcology, which meets at Glasgow from April 22nd to 24th. The first day's discussion will be devoted to the clinical and pathological features of ovarian tumours (excluding endometriomata). The hon. secretaries are Prof. James Hendry, 7 Clairmont-gardens, Glasgow, C.3, and Dr. John Hewitt, 16, Whitehill-street, Glasgow, E.1.

INDEX TO "THE LANCET," VOL. II., 1930.

THE Index and Title-page to Vol. II., 1930, which was completed with the issue of Dec. 27th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

MANCHESTER VOLUNTARY HOSPITALS' COMMITTEE. The annual report shows that the total ordinary income for last year was £307,703, compared with £288,904 in 1928. The total ordinary expenditure was £323,984, compared with £315,615 in the previous year. The net deficit for the year is £12,430 less than that of 1928. The net increase in ordinary income is £20,799, and the increase in expenditure is £8369. The number of admissions to the hospitals was 730 more than in 1928.

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[1] The Meaning of Sacrifice. By R. Money-Kyrle, M.A., Ph.D. London: The Hogarth Press. 1930. Pp. 273. 18s.

[2] Swendson, J. J.: Minnesota Med., December, 1930, p. 868.

A POST-GRADUATE COURSE.

MOTIVES AND MECHANISMS OF THE MIND.*

II.—DYNAMIC PSYCHOLOGY.

THE CONCEPTION OF "PURPOSE" APPLIED TO PHYSICAL ORGANS IN HEALTH AND DISEASE.

IN the previous lecture a distinction was made between those mental disorders in which the disorder was resultant, and those in which the disorder possessed a "function" or element of purpose. This conception of *purpose* in the ætiology of disorder may be traced both in health and disease in organic medicine, and is not only of importance in psychopathology.

The ordered development and specialisation of function of the physical organs of the body may be considered as being *purposive*—for example, the purpose of the alimentary canal is digestion, assimilation, and elimination; and the purpose of the central nervous system is selection, inhibition, and control. The organisation of the body as a whole depends upon a working in harmony of its various functions, a coördination of the purpose of each unit system into a single team, working in harmony under the control of the central nervous system. The purpose of the whole unified system is to produce greater order, freedom, and power over the external environment in which the system lives.

A further instance of purposive behaviour in organic medicine is found in the behaviour of the organs in states of disordered function—i.e., disease. Let us consider, for example, the changes which take place with the introduction of a foreign body into the tissues, and the development of *inflammation.* The introduction of a septic body into the finger gives rise to the cardinal signs of inflammation—swelling, heat, redness, and pain. From one point of view the signs and symptoms of inflammation are regarded as being something undesirable which requires immediate remedy, but when considered in detail the disorder is seen to consist of a series of related purposive interactions on the part of the tissues involved. The introduction of the foreign body causes a reaction on the part of the tissues, the purpose of which is to expel it. The leucocytosis is a massing of phagocytic cells, the purpose of which is to remove the undesirable foreign body. The heat, pain, redness, and swelling are all consequent upon this purposive activity, the increase in temperature of the part being also probably purposive in assisting the remedial process. It is as if the tissues are prepared for the invader with a fixed type of defensive reaction. It cannot be said that there is any *consciousness* of purpose in this response, but it is very important to realise that *consciousness is not necessary for behaviour to be purposive.*

Another example of purpose in organic medicine is found in vomiting. The symptom, when it occurs, is subjectively very undesirable, and the patient applies for a remedy, not realising that the vomiting is itself a remedy for a previous state of disorder. The purpose of vomiting is, again, the removal of a noxious foreign body, to the stimulus of which the muscular part of the stomach reacts with an expulsive impulse.

Nevertheless, the patient is usually quite right in regarding vomiting as needing a remedy. At this stage it is necessary to recognise that, wonderful as are the purposive defensive mechanisms in the human body, these may, and very frequently do, require medical remedy before the system can return to an ordered state of health. It is very important to recognise, on the one hand, the natural purposive remedial aspect of the human body in a state of disease. It is as important to recognise, on the other hand, that this remedial function may itself call for treatment, it being unable to deal effectively with the disorder without medical aid. This point will be returned to when we consider purposive behaviour on a higher plane than that of organic function.

NON-PURPOSIVE OR "RESULTANT" ORGANIC BEHAVIOUR.

A little consideration will show that by no means all organic behaviour can be regarded as purposive. Take, for example, the familiar symptom of *tremor,* which is one of the commonest signs of a disordered nervous system. This is consequent upon a disordered state having arisen in the nervous unit. The process of inhibition, which normally maintains a controlled and ordered tone throughout the nervous system, is broken down in its higher organisation, due, perhaps, to exhaustion or toxæmia, and the symptom of tremor is *resultant* without being remedial or purposive.

A second example of a resultant, non-purposive symptom is the muscular paralysis found in Bell's palsy, where the seventh nerve has been put out of action from some cause. A ptosis of the eyelid due to conjunctivitis may be considered as purposive, but if it is due to nerve paralysis it is resultant and non-purposive.

Another example of non-purposive behaviour is to be found in the development of neoplastic growths. A neoplasm is an independent extension of cells in a parasitic and independent way, at the expense of the normal function of the invaded organ. It is not purposive, and surgical remedies are usually required to protect the body as a whole from the disordered activities of neoplastic cells.

THE IMPORTANCE OF DISTINGUISHING BETWEEN PURPOSIVE AND NON-PURPOSIVE DISORDERS.

It is not many years since the greater part of medical treatment was directed towards the remedy of symptoms and there is still too often a tendency to resort to symptomatic measures. The universal remedy for a headache is aspirin without reference in most cases to the underlying cause. A patient who suffers from insomnia is given hypnotics, or if it be "*nerves*" he is given either sedatives or tonics. But symptomatic treatment ignores the cause of the disorder, and in many cases must leave it still uncured.

The distinction which has been drawn between purposive and non-purposive or resultant symptoms provides the clue to those cases which may be treated symptomatically and those which require deeper insight into the underlying cause. Disorders which belong to the resultant or non-purposive group may, if necessary, be treated individually and symptomatically. Those which are purposive must be treated by a method which seeks to define and remove the cause.

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* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Lecture I. appeared last week.

In no field of the physician's responsibility has the use of remedies been more symptomatic than in that of mental disorder. Mental disorder differs from organic in that it is more frequently purposive than resultant. The same rule of treatment applies. In order to get the best result from treatment of mental disorder we must define and remove the cause before we can expect to effect a remedy.

In the previous lecture examples were given of enuresis and insomnia in which the disorder was primarily purposive and which cannot, therefore, be expected to respond to symptomatic treatment.

Intractable Illness.

Every doctor is familiar with the disheartening experience of intractable cases of illness which he feels ought to respond to simple remedies, but which, in fact, seem beyond his power to cure. Such patients usually complain of many symptoms which they describe in fullest detail, even with great satisfaction. If a symptom of headache has been improved, pain in the shoulder has taken its place; if the patient is sleeping better, then he is less able to do his work owing to vague feelings of illness or excessive fatigue. Very often such patients in their anxiety to be cured have gone so far as to write down for the doctor a list of their complaints, and successive visits will find modifications in the list, but additions to the number of complaints rather than any sign of cure. They go from one doctor to another, and sometimes their doctor is not sorry to see them go.

If a patient were getting anything out of his illness, if the illness were *purposive*, the intractability could easily be appreciated.

It is quite obvious on a little consideration that illness does achieve a purpose. We are probably all familiar with the feeling that we should like a few days in bed, with someone to be kind to us and give us special attention. Such a rest from the cares and responsibilities of everyday life would come as a welcome relief, but only for a while to most of us. However, the fact remains that a little illness can be attractive under certain conditions. Illness may be still more useful; in fact, it may become invaluable under certain conditions as the following case will show.

Every child wants to be the centre of attention and to exercise some degree of authority. A child of 3 finds his small world enlarged by the introduction into it of a baby brother and, at a single blow, he finds that he has lost both his position in the centre of the domestic stage and his unique dominance over his parents. No one, after having been number one, likes to be relegated to the position of "also ran." An illness causes the displaced one for the time being to recover his position of authority. He is again the centre of the stage, again the one whose slightest whim is met with pleasure and approval. His illness is useful and if his power of adaptability is lacking, if his will to be really strong is not keen, from this early useful experience may be developed the lifelong tendency to invalidism. His illness will be intractable because it is purposive.

CASE H.—A boy of 17 was working in a machine shop at a task he heartily disliked. His father, who was also the foreman, he disliked as heartily as the job. His best friend caught his finger in some machinery and was away from work for three months with compensation. The boy expressed a wish to be ill in order that he also might be able to stay away from work. He got the worst of an argument at home with his father and went to the pictures, where he saw a film of a popular hero who lost his sight, but was married nevertheless to the most attractive heroine, who mothered him happily for the rest of his life. The following day the boy complained of failing eyesight which rapidly developed until he was almost blind. The patient was referred from the eye hospital as a case of conversion hysteria, which was confirmed by the history and circumstances of his illness. He might have been a case of conversion hysteria. His condition seemed at first to improve under hypnotic suggestion, but after a month's unsuccessful treatment he was referred back to the eye hospital where it was discovered that he had bilateral optic neuritis.

Such are the difficulties of diagnosis. Everything was suggestive of a purposive symptom, but it was in fact not purposive, but resultant.

The shell-shock cases of the war provided many instances of purposive disorder which were, nevertheless, quite distinct from the numerous other cases of malingering, with which they were sometimes confused. The man who could face the fact that he felt afraid was not subject to conversion hysteria. The man who could not face the fact, but who had to adapt himself somehow to a situation in which he felt miserably inadequate, was subject to the possible development of conversion symptoms, the purpose of which was to solve his problem for him in a way which was beyond his control. From these causes were developed the cases of blindness, paralysis, fits, aphasia, and innumerable other symptoms—all of which were effective in removing the sufferer from an intolerable situation.

In the case of the malingerer the problem was a conscious one—consciously attempted, consciously achieved. In the true case of shell-shock the problem was not conscious, but was achieved through the natural unconscious method of conversion hysteria, over which he had no conscious control.

Cases of "traumatic neurasthenia" come frequently into the hands of the general practitioner and are always regarded as a difficult problem. They are frequently complicated by the question of compensation. These, again, provide a simple example of a purposive disorder, in which the illness is being useful. It is only natural if there is any question of compensation that the patient should wish it to be as much as possible. He need not consciously think so, but the amount of compensation is going to depend upon the degree of his disability and the tendency is therefore for his disability to be increased. Such cases tend to clear up with greater facility when the compensation is settled. It is easy to suspect a patient of malingering, of consciously exaggerating his disability, but this is not necessarily the case at all. The mechanism for what is called "conversion hysteria" is there, which makes use of the opportunity provided by the disability, quite independently of consciousness. The strain of work under conditions of economic pressure and the everyday difficulties of life are often sufficient in any case to exaggerate the symptoms of illness as a defence, without any question of compensation.

WHAT DO WE "NEED" FOR ADAPTATION?

If disorder is so often purposive, what purpose is it trying to achieve? In other words, what are the needs which all of us tend to feel as essentially requiring fulfilment? They are essentially three: (1) love—a feeling of priority; (2) protection—a feeling of security; (3) power—a feeling of control. Consideration of all the cases already mentioned will show the degree of satisfaction along these three lines which have been attained through illness. The purpose of the disability has been to achieve what the patient wanted or needed, whether he was conscious of it or not. The illness was a means to an end, and the end was love, protection, power—any or all. *It is therefore not true to say that the patient wants his illness, as such.* He does not want it as an end in itself, but he does want it as *a means to an end.* He wants what he gets out of the illness and not, as a rule, any particular symptom. The patient is quite right in saying that he does not want to be ill, and in repeating that he wants to be cured. Furthermore, the patient does not know what he does want. He is not conscious of his need, but love, protection, and power are goals which human nature is pre-ordained to pursue and find attractive.

The child makes use of the thunderstorm or enuresis as a way to finding love and protection in the mother. In the cases of insomnia mentioned in the previous lecture, the symptom was regarded as intolerable, but the purpose of it was to be found in satisfaction of the need for love, protection, and power.

Conflict.

Why should it be necessary to develop a symptom which is itself undesirable, in order to obtain a goal which is desirable? The answer to this question introduces the conception of *conflict.*

There are sometimes reasons why the goal, besides being desired, should be undesirable because it is feared and in those cases a *wish not to* is opposed to the primary goal-seeking wish. Life possesses a primary polarity between the impulse towards inertia and the impulse towards growth. On the one hand there is a wish to retreat, or at least to maintain the status quo. On the other hand, there is the wish to grow beyond the limits of our present experience towards the attainment of higher things. Here, then, is a possible basis for all conflict. But there are other causes for our frequent experience of a duality of opposing wishes.

The importance, at any given time, of previous experience in evaluating the present circumstances is a matter which will be more fully developed in succeeding lectures, but beneath the surface of the man of any age there is always a foundation of previous experience during his own childhood and the childhood of the race. All our wishes are not socially tolerable, nor even consciously acceptable. Social adaptability is a comparatively late development and is superimposed upon primitive childish egotism. This second aspect of conflict is due to the difference between the past and the present, the old and the new, the primitive and the civilised, the child and the man. The wishes and feelings of the one are not tolerable to the wishes and feelings of the other.

Then there is the conflict between the heart and the head, between "feelings" and "thoughts." There are many things that we feel that we would like to do, that we know we must not do, and our heads are frequently in conflict with our hearts. The most important point to recognise, however, is that our heads are frequently unconscious of the wishes or tendencies of our feelings. The cases which have already been cited were not cases of conscious conflict, but of unconscious conflict. The patients do not know what they feel or what they want, nor even that they are getting what they want. We do not realise the extent to which our behaviour is motivated by unconscious processes. On the physical plane inflammation is a purposive unconscious process; on the emotional plane conversion hysteria is another example of a similar purposive unconscious process.

Conflict therefore may be between unconscious feelings and tendencies and conscious wishes. On the one hand there is "I feel I want"; on the other "I think I ought." That often I am not conscious of what "I feel I want" is due to the fact that so many primitive childish "wishes" are a hereditary pattern independent of individual experience. This point will be developed further in a later lecture.

CONSCIOUS CONFLICTS—SUPPRESSION.

If we were to judge from the report of coroners' inquests we should have to believe that conscious conflict was the cause of mental illness. Cases of suicide are usually related to some immediate problem which is consciously in the patient's mind—i.e., disappointment in love, financial anxiety, worry over illness. It is obvious that any of these factors may impose an additional strain, but they are all external factors operating upon the patient's internal psychological constitution, and it is the internal constitution which determines whether or not illness or suicide or any other pathological behaviour may follow. As an axiom it may be stated that conscious conflict cannot, in itself, *cause* an illness, but it may be sufficient to *precipitate* it.

Overwork is frequently cited as a cause of nervous breakdown. The additional strain imposed by long hours, heavy responsibility, and possible financial disappointment is an added burden, which may result in a nervous breakdown, without being the cause of it. For instance, we may ask *why did the patient overwork?* In many cases it will be found that he was trying to do more than anyone would have expected him to be able to do, that he was more critical of himself than he had any right to be, that he was more intolerant of failure and unduly anxious for complete security. With these factors operating he must inevitably tend to overwork and must also finally be disappointed with his achievement. In other words, overwork often depends not upon the external factor of necessity, but upon the internal constitutional factor which would make a patient overwork anyhow, whether it was necessary or not. In this case it may be said that overwork has precipitated the illness, but that the cause lay within the individual's constitution rather than in external circumstances.

CASE I.—A man came for a consultation complaining that he was worried, depressed, and losing his sleep. On inquiry he was found to possess two wives and two families who were ignorant of each other's existence, and at the same time he was a responsible church-worker. When one considers the difficulty of maintaining his social prestige and his domestic problems in watertight compartments, together with the pressure of economic necessity, there need be no surprise at signs of nervous strain. There must have been a great deal of conscious conflict, but there was probably an internal and unconscious motive which prompted him to organise his life in such a difficult fashion.

Conscious conflict may be dealt with by a process of *suppression.* When I am aware that I want two different things I weigh one against the other, and choose the one and suppress the other. This is a conscious process of selection in which one alternative is suppressed in favour of another, and is not to be confused with *repression* which is an unconscious and automatic process.

UNCONSCIOUS CONFLICT—REPRESSION.

It is very difficult to formulate at this stage any ideas which will define unconscious conflict, but the conception will be developed in later lectures. It will be sufficient for the moment to define unconscious conflict as being derived from a source of unresolved past wishes and needs, primitive and infantile. Unconscious wishes have either never entered consciousness or, originating at an earlier stage of development, are not consciously tolerable when they have been retained until a later one.

Childish wishes are very often not consciously tolerable. For instance, a small girl, aged 3, may say to her mother: "When are you going away so that I can go to bed with Daddy?" It is not long before wishes of this kind are dealt with by *repression*. This is an unconscious automatic process which eliminates the wish from consciousness altogether and cuts it out of the conscious mental field of wish-fulfilment. It is out of sight but it is not out of mind and repressed "unconscious" wishes of this kind are very frequently sources of subsequent symptom formation.

CASE J.—An example of this kind occurred in a patient aged 29, who stated that at the age of 23 she was raped by her father. She was able to give full circumstantial details without exaggeration and in a most impressive way which, had they been given in a court of law, and in the light of his known moral character, might well have secured her father's conviction. She had at this time spent about three years in a mental hospital suffering from a very serious nervous breakdown, attributable, as she said, to the shock. Her first breakdown had in fact dated from the age of 23, and her history showed that she had not been well since that time. After she left the mental institution, improved but uncured, she was seen as an out-patient twice a week at the Tavistock Square Clinic, and it became increasingly plain that if the episode which she said was the cause of her illness had actually occurred, it was in fact no more than a coincidence, because it represented her lifelong ambition, although it had never been fully conscious. She was of a very religious disposition—in fact, over-conscientious—and such an idea was quite intolerable to consciousness. She had been a lifelong enemy of her mother, and her most frequent dreams involved her mother's death. There had been many minor episodes of intimacy in which her father had played an unwise part, unaware of what the consequences were likely to be.

She had many symptoms, but only one will be given as an example of repression *and fulfilment of* the unconscious wish. She said that she wished to count everything in fours. This had originated, as far as she remembered, when at 14 she had tried whilst lying in bed, to fit the tiles of the roof across the road, four at a time, inside the four panes of her bedroom window. This was a period of great emotional strain with regard to her father, and was not in fact the beginning of her tendency to count in fours, as she remembered later that as a very small child she liked her doll to have its eyes half-shut, so as to have two lids and two eyes and so make four. She interpreted this *symptom* entirely of her own accord, saying that she was not at all sure that it was right, but that it had just come to her like that. She said "If I start with the figure 4 I feel that this (A in Diagram I.) is my father, this (B) is my mother, and this (C) is me. What I want to do is to go like this. That is my father (A in Diagram No. II.), that is my mother (B), that is me (C), and then I want to make a perfect square (*dotted line D*)—and this is what I *want*. I feel that this is something to make everything complete—like I wanted a baby when I was a little girl, and I feel that the square is something which is quite right and proper, and nothing wrong with it at all."

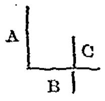


Diagram I.

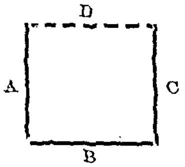
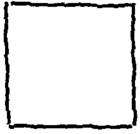


Diagram II.

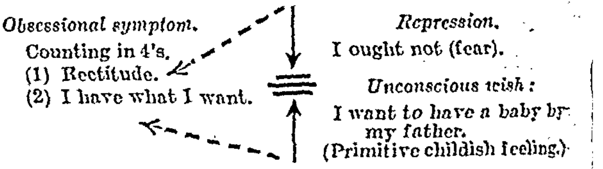
Perfect square



="Rectitude."

In phantasy, the patient had always wanted a baby by her father and she obtained it unconsciously through her obsessional symptom of counting in fours and squares, but she obtained it in such a way as to combine it with a symbol of conscious moral rectitude [illegible]ork.

Solution of Conflict by Symptom Formation.



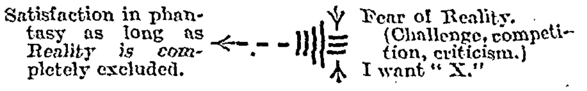
RATIONALISATION.

Rationalisation is the term applied to the satisfactory conscious explanation of wishes and behaviour derived from unconscious sources and unsatisfactory to consciousness. The extent to which this mechanism can take place is almost infinite because of the freedom of the conscious thinking process to arrive at any conclusion which may be satisfactory to itself, which it then embroiders and believes to be true, because it likes it to be so. Most of our thinking suffers from rationalisation—i.e., it is not what is really true, but what we would like to be true. When we are most sure, we usually have least grounds for our assurance, but most wish to be sure. Rationalisation therefore is a process of conscious elaboration and wish-fulfilment. It enables us to prove what we wish to prove and explain in the way that we like, what we should be afraid to explain in a way that is true.

In the case cited above, the patient's consciousness had rationalised her own self-deception by saying that her father had raped her, and that that was the cause of her breakdown. It was only after several months of treatment that she came in a great state of emotional disorder to say: "Doctor, it is not true—*he didn't do it.*" Her unconscious wish had entered consciousness and from that time it lost its power to control her.

PHANTASY.

Solution of Conflict by Phantasy Formation.


Satisfaction in phantasy as long as Reality *is completely* excluded.
Fear of Reality.
(Challenge, competition, criticism.)
I want "X."

Another way in which the conscious wish may be gratified is through phantasy. The essential point in phantasy is that it must at all costs avoid reality. We can achieve in phantasy the wish that is impossible of achievement in reality and which, if achieved in reality, would be intolerable. For instance, the child's longing for power and self-importance makes him play the part both of field-marshal, and of editor of the popular press which he has created to exploit his doings. Either of these achievements in reality would involve him in a degree of hard work and responsibility which would be intolerable. If the habit of phantasy is continued his capacity for real achievement will become progressively less. Phantasy is the same as day-dream. Both are an escape from the irksome reality of everyday life. Its material may be the same as imagination, but phantasy is essentially different from imagination in that, whereas phantasy *must remain* dissociated from reality, imagination may be a means towards achieving it. When phantasy becomes real, it is always met with disaster. We should all like to believe that the girl of our dreams is the most beautiful girl in the world, but to see what corresponds to that phantasy in the front row of the chorus and to marry her is to court disaster.

The following is an example of phantasy occurring in a male homo-sexual, aged 23, and represents a day-dream of wish-fulfilment, which was fortunately dissociated from reality.

> "I would have a very famous school, which would be for consumptives, arranged so that they could be naked all day long. I should start with a few boys in a Clinic, who would get on so well that we should become world-famous, so that eventually I would have about 1200 boys who would all be naked. We would have a magnificent building with a fine Chapel surmounted with a Golden Cross, and the motto would be 'The highest and the best.' The boys would sleep naked under ultra-violet light, with their eyes shaded. We should do observations on them as to the effect of frequency of semination upon their work. Semination and homo-sexuality would be encouraged in order to add to the joy of school life, thereby encouraging the power of love. The boys would grow up to be the most important men in the Country and they would look up to me as being the most important of all. They would get into all the places of power and responsibility and would eventually become members of parliament, so that I should be elected as Prime Minister and be the most important person in the world."

Summary.

The conception of "purpose" is essential to understanding the dynamic aspect of modern psychology. Purpose is not necessarily *conscious*, nor is it limited even to *mind*, as was shown by examples of purposive behaviour in the body in conditions both of health and disease.

Not all the "behaviour" of the tissues and parts of the body in disease is purposive, however. Some, of which tremor is a simple example, is only secondary to, or resultant from, a deeper cause. In the latter case, symptomatic treatment, if necessary, is justified. In the former, however, the purposive nature of the behaviour must be remembered, and treatment must remedy the cause. Such purposive disorders are far more commonly found in psychological medicine, and yet in the past they have been treated almost entirely symptomatically, with results necessarily disappointing.

The personality as a whole has certain primary needs, which are sought *purposively*, though not necessarily *consciously*. Most important amongst these are Love, Protection, and Power. These may, under certain circumstances, be achieved through illness and development of symptoms, in which case the illness is wished for not as an end in itself, but as a purposive means to a desired end.

Man is more than the sum of his own experience, and his behaviour is often motivated by past primitive and childish wishes, which are not tolerated by his higher reason and conscience. They are therefore "repressed," but still remain dynamically active, and therefore give rise to "conflict," and often to subsequent symptom formation.

Consciousness is all of which we are aware, but does not contain all our motives. Consciousness as a whole, however, is unified in the way that pleases its own standards by "rationalisation." It therefore looks deceptively complete, and this deception is itself purposive in affording both a self-justification and an organised simplicity and unity. "I am quite sure" usually only means "I want to be sure." Rationalisations are therefore liable to be defended with great emotional intensity, and the latter is usually indicative of the existence of the former.

Purpose or wish fulfilment may evade reality altogether, and achieve the desired end in "phantasy," which is pathological because it is at the expense of a flight from reality. Adaptation is wish-fulfilment through reality, and phantasy is false adaptation. Being a proposive detachment from reality it is a fundamental factor in the development of insanity.

SPECIAL ARTICLES

POST-VACCINAL ENCEPHALITIS.

A REVIEW OF RECENT DATA.

IN an appendix to a further report of the Committee on Vaccination, just issued, appears a translation of a report by Sir George Buchanan presented in May last to the permanent committee of the Office International d'Hygiène Publique. This report has been designed to bring out the principal observations which have been received by the Office International since the expert conference at The Hague in 1926 on the incidence and character of post-vaccinal encephalitis. The countries chiefly affected are the Netherlands and England.

The Netherlands.

Dr. Jitta estimated in May, 1929, that 146 cases had occurred in Holland and that recent data in 1928 pointed to a ratio of 1 case per 5000 vaccinations, with a fatality of 1 in 3. In August, 1929, variola was imported into Holland and energetic measures were taken to secure vaccination on a large scale. At least 77,354 vaccinations and 1,196,465 revaccinations were reported, and these figures have been taken as a basis. There were 52 cases of encephalitis after primary vaccination and 31 after revaccination; of the former group 14, or 26·9 per cent., died, on an average five days after the appearance of the disease, which occurred on the eleventh or twelfth day. The incubation period was shorter after revaccination. Although 16,000 infants under 1 year of age were vaccinated, there was no case among children less than 12 months old. There was one case among 3487 children vaccinated between 1 and 2 years of age, and one case among 815 vaccinated between 6 and 11 years of age. There were 32 cases after revaccination, most of them in persons over 12. The lymph came from Holland itself and three scarifications were made, each ½ cm. long and 2 cm. apart. There was no certain relation between the intensity of the local reaction after vaccination and the occurrence of encephalitis, and in no case was there anything like a generalised vaccinia.

England.

During 1926 and the first nine months of 1927, 40 English cases were considered and 15 of them were eliminated. In the two subsequent years 108 cases were reported and 90 of these were considered to be post-vaccinal encephalitis. During these two years about 576,000 primary vaccinations and 293,000 revaccinations were performed with Government lymph, but during 1929 an unusually large number of vaccinations were done with lymph obtained from commercial firms, and the total number is probably about a million and a half. Of the 90 cases, 54 were in children of 5 to 15 years of age. As had been noticed previously, some large and populous communities where plenty of vaccination was being done entirely escaped encephalitis, while there was a notable grouping of cases in other similar areas. There were four instances of familial incidence, and one case in each family died. The youngest patient was 1 year and 8 months old and the oldest 55 years.

Forty-seven patients recovered completely, but one woman had not completely recovered after six months. There were 42 deaths, of which 28 occurred within a week of the onset and all but one of the remainder within three weeks.

It is therefore possible to say definitely that in Holland and England post-vaccinal encephalitis is essentially a disease of children primarily vaccinated between 5 and 15, although it is not confined to those years and has occurred in revaccinated cases. It would therefore be expected to occur in countries where children are not customarily vaccinated for the first time until they are of school age. It is, however, almost certain to be missed unless the attention of the public health authority is called to the need for its thorough investigation.

Outside Europe.

There is no record of encephalitis in Asia and Africa, despite the enormous numbers of adult vaccinations. Even though the vaccinated individuals might not come under medical attention after the vaccination, it cannot be without significance that no case of encephalitis was heard of after, for instance, 15 million vaccinations in Bengal in 1928.

A special search of the mortality and morbidity statistics of Canada since 1921 has not raised any suspicion of post-vaccinal encephalitis in that country, and it has been observed very rarely indeed in the United States, where a large proportion of the primary vaccinations are performed at the sixth or seventh year. Apparently only 20 cases are on record, and these were of the usual type. No case has been reported in Mexico in the last five years. Central America and South America have no record of a case, although small-pox and vaccination are both common.

No case has been recognised in Australia and there are grounds for believing that this is not due to any oversight. There has, however, been no small-pox during the last two years and the number of vaccinations has therefore diminished, those performed being usually on infants of less than a year old.

Continent of Europe.

In Germany, during the years 1927 to 1929, there were 50 certain cases with 15 deaths. Most of the vaccinations are done in May, June, and October on children of 2 years of age, and most of the cases occurred during these months and in children of that age. The period of incubation appeared to be 11 days. During the three years 1927 to 1929 there were six cases after revaccination and all of them died. In four of the cases no scar from the primary vaccination was visible. In Austria there were 65 cases with 15 deaths after primary vaccination and 7 cases with 3 deaths after revaccination during the years 1925 to 1929. No cases of post-vaccinal encephalitis proper have been notified from Spain, but certain meningeal symptoms were considered to have been connected with the use of neuro-vaccine. Primary vaccinations in Spain are nearly always carried out before the age of 6 months. The data are also negative from Greece, though special attention has been called to the subject and about 800,000 vaccinations were done during 1928 and 1929. Primary vaccination is rarely done in France between the ages of 5 and 15 and, although much attention has been given to post-vaccinal accidents, no case of encephalitis has been reported from 86 departments; of six suspected cases in the four other departments, only two seemed to be genuine. There are no cases known in Belgium or Italy, probably again because vaccinations are usually done on infants.

Norway reports on 28 cases since 1921, 16 of them between the ages of 5 and 10, with 15 deaths. In Sweden the first case was reported at the end of 1927, and compulsory notification was ordered at the beginning of 1929. During that year three cases occurred and two died. The law requires that children should be vaccinated before the end of the sixth year, and they are therefore usually done as late as possible. It has been noted that nervous disorders are not rare after measles, chicken-pox, mumps, and whooping-cough.

No fresh case has been reported in Switzerland since October, 1928. Vaccinations are rare in German Switzerland, and in the French cantons are compulsory before the end of the first year. Between 1921 and 1926 there was an epidemic of small-pox, and between one and one and a half million vaccinations were performed on older children. Five cases of encephalitis resulted in children between 6 and 17 years of age, and there was one death. In Roumania vaccination is regularly done during th first year of life and again at school age and no cas has ever been observed, although a special look-ou has been kept. The same applies to Poland, excep that two cases were reported in 1926. In Portuga no cases occurred during the years 1928 and 1929 The Soviet Republic is taking steps to study th matter very carefully; one case was reported i 1928 and another in 1929, and between eight and nin million vaccinations are done every year. The firs case in Jugo-Slavia occurred in 1929 after a primar vaccination at the age of 3½.

Pathology.

The English Committee on Vaccination has prepare a commentary on the histological study of 25 typica cases. Its findings accord with those in othe countries. The characteristic lesion is a perivascula demyelination affecting in particular some of th vessels of the white matter of the brain and cord, an attended with certain definite tissue reactions amon which the inflammatory ones are often the leas obvious. The lesions are remarkably symmetrica They may be found after comparatively trivial acut infections, and the problem is not confined to pos vaccinal encephalitis alone. There is urgent nee to find some other method of protection again small-pox, as has already been done in the case rabies. Subacute disseminated sclerosis and acut disseminated encephalomyelitis have many path logical features in common, although they can l clearly differentiated; and recently Pette in German has described a case which seems to occupy an inte mediate position between them. Attempts to find virus transmissible to rabbits and monkeys have bee invariably negative. Kling in Sweden demonstrate some round or oval bodies which he regarded a protozoa, but he does not wish to make any decisiv statement.

The rapporteur's impression is that this complica tion of vaccination is a characteristic clinical entity having a parallel in the encephalitis which may follo acute infectious diseases, and that it is most desirabl that fuller data should be obtained about *encephalit post-infectionem*. His review, while showing tha post-vaccinal encephalitis is an important practic problem, enphasises the rarity of its occurrence an supports the view that it should not be allowe to diminish the confidence placed in the use vaccination.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

HEALTH IN THE UNITED PROVINCES.

REPORTS such as that on the health of the United Provinces for 1929, which is now before us, furnish a rejoinder to agitators who charge the present régime in India with callous indifference to public health. The United Provinces of Agra and Oudh, with their population of over 45 million people, can be taken as a fair example of what is being done elsewhere. The area concerned measures about 107,000 square miles. Figures are given with the qualification that registration of vital statistics and reporting of epidemics are defective; but efforts are being constantly made to effect an improvement, and records are more trustworthy than they were 20 years ago. The provincial birth-rate was 24·3 (35·3), the death-rate 24·2 (25·0), the quinquennial average being given in parenthesis for comparison. Infantile mortality is given as 168·6. There are, of course, marked variations in different regions; for instance, the general death-rate was as low as 15·2 in Gonda district, and as high as 75·8 in the city of Lucknow; and infantile mortality varied between 116·3 and the terrible figure of 469·2, Lucknow again holding the high record. It is satisfactory to note, however, that the general death-rate for infants shows an almost uninterrupted decrease from the decennial average for 1901–10, which was 255·0. As might be expected, the urban areas show a much higher rate than the rural—275·7 for the decennium as contrasted with 157·7. The chief causes of mortality are given as "fevers," cholera, plague, respiratory diseases, dysentery and diarrhœa, and small-pox, in descending order of frequency Fevers claimed 810,583 victims, this number being somewhat less than the quinquennial average, and on the rough diagnosis available the overwhelming majority of these deaths were due to malaria; 77,000 were credited to "other fevers," 12,000 to measles, 8000 to enteric, and only some 300 each to relapsing fever and kala-azar.

The Himalayan foothills, and the great marshy district of the Tarai below, which come into the U.P. boundaries, are hotbeds of malaria. Antimalarial work is being carried out on energetic lines, including the filling in of tanks, the re-alignment of canals, and the draining of swamps. School cinchonisation has been extensively employed and its results are shown in a much diminished spleen-rate and in an increase of 20 per cent. in the school attendance figures during the two malaria seasons. The free distribution of cinchona tablets in villages has also had its effect in diminishing mortality and spleen-rate, and even in increasing the birth-rate. Cholera accounted for 50,924 deaths, the ratio being 1·12 per 1000 of population, as contrasted with a quinquennial average of 0·68. This disease is a specially grave problem in the U.P., owing to the fact that several of the great fairs are held within its borders, and that the district of Garhwal is traversed by the pilgrim route to the Himalayan shrines of Badrinath and Kedarnath. In these areas special cholera schemes have to be worked out. During the year under report cases occurred along the Garhwal pilgrim route, but they were kept well under control, and only 30 deaths were registered there. Pilgrims who left the route, however, carried the infection into the interior, where the disease took on a severe epidemic form. Wherever it occurred cholera was dealt with by the usual commonsense quarantine measures, by inoculation (of 93,000 persons), and by the permanganating of wells. The emergency medicinal treatment consisted of kaolin and a mixture of essential oils. From plague there were 37,678 deaths in 1929, as compared with 80,943 in 1928—a welcome decrease. Inoculation is employed, and 131,320 people were inoculated, as contrasted with more than three times as many in the previous year, when there was more call for it owing to the greater prevalence. An intensive campaign of rat destruction was carried on in some cities; more than 400,000 rats were destroyed by one municipality, mostly by trapping. Under the head of small-pox 11,725 deaths were returned, as contrasted with 3012 in 1928, a number almost twice that of the quinquennial mean. In the best vaccinated provinces bad years will occur, but a chart which is given to show the relation of vaccination to small-pox over a number of years ought to convince the most hardened antivaccinator. During this year 1,374,372 primary vaccinations were performed, and of these 94·7 per cent. were successful. Of children under one year 56·1 per cent. were successfully vaccinated. Only one case of encephalitis following vaccination was reported. A vaccine institute is maintained to supply glycerinated lymph.

A large number of travelling dispensaries were in operation during the year and found to be very useful, and the village aid dispensaries in connexion with schools are well spoken of. So popular have they become that the number, which amounted only to 154 in 1928, has now risen to 1199. In connexion with them elementary hygiene is taught, and an attempt is made to get the people to clean up their villages. A feature of the U.P. health service is the provincial hygiene institute, with which is combined the laboratory of the public analyst. The institute is evidently a very live concern. It carries out routine work, such as clinical bacteriology and water examination; conducts classes for the diploma in public health; undertakes the training of visitors in connexion with maternity and child welfare work; and is concerned with investigations of various kinds, and the preparation of material for public health propaganda, including the production of cinema films. One of the institute's most useful functions is the investigation of malaria epidemics, of which it has at present a large programme in hand. The importance of team-work of this description can hardly be overstated.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

PUBLIC HEALTH IN THE FREE STATE.

THE annual report of the Department of Local Government and Public Health of the Irish Free State for 1929, which has recently been issued, contains much interesting information. It is stated that a county medical officer of health has now been appointed in 15 counties. (This number has been much increased since the period covered by the report: there are only four or five counties in the State which are still without county medical officers of health.) Medical inspection of school-children was in operation in Dublin, Cork, and Clonmel, and in the counties of Cork, Kildare, Offaly, and Louth, and arrangements were being made in the cities of Limerick and Waterford and in many of the remaining counties. The first inspections of the school-children have revealed a high rate of decaying teeth, enlarged tonsils and adenoids, and defective vision, while all forms of tuberculous deformities and conditions of crippledom are fewer than anticipated. Dental caries, the most common physical defect, was found in over half the children examined. Eleven per cent. were found in need of the services of an ophthalmic surgeon, and 18 per cent. had enlarged tonsils and adenoids. An increasing number of areas have made use of the School Meals Act. Infant mortality is diminishing, especially in Dublin county borough. Concurrent with this is a diminishing mortality among children between 1 year and 4 years of age. Three county boroughs and 21 counties have adopted schemes for the welfare of the blind. Arrangements for the prevention and treatment of tuberculosis have progressed, but there are still many patients suffering from the disease who do not come within the influence of the measures taken to prevent or cure it. The principal epidemic diseases reported during the year were: Scarlatina (1148 cases), diphtheria (989 cases), enteric fever (304 cases), and typhus (29 cases). Attention is drawn to the continued retention in the county homes of a considerable number of mentally defective persons and of unmarried mothers.

THE LATE DR. HERRON.

Dr. Robert Thomas Herron died on Dec. 30th at his home in Armagh in his sixty-seventh year. He was educated at the Royal School, Armagh, and received his medical education in Dublin, Edinburgh, and Durham. In early life he was associated with many branches of sport and was one of the best sprinters of his time. He was for many years a member of the Tynan and Armagh Hunt Club, and frequently rode his own mount at point-to-point meetings. He was a clever surgeon and was medical officer for the Armagh Board of Guardians, His Majesty's Prison, the Military Depôt, Macan Asylum for the Blind, and Shiel's Institution. Dr. Herron served in the South African War and retired with the rank of major, holding the 1901–02 medal, with four clasps. He also served in the late war. A man of culture, a physician of versatility and resource, a sportsman, a prime mover in every social work, his genial presence will be long missed in County Armagh.

PANEL PRACTICE

A Report on Insurance Practice.

AT a meeting of the Paddington Medical Society to be held at the Great Western Hotel, Paddington Station, next Tuesday evening at 8.45 P.M., a report on national health insurance practice will be presented. The report is the outcome of about a dozen meetings in which a number of practitioners resident or in practice in the Paddington area have taken part. The matters discussed include: (1) a definition of a "normal service" to be rendered in respect of any given capitation rate; (2) the encouragement of the insurance practitioner in the performance of additional and special services beyond the range of this normal service; (3) the difficulties connected with medical certification and, particularly, a statement of causes of increased certification which it is suggested explain the problem and place it to a great extent outside medical control; (4) remedies for the purely medical agents in the causation of excessive certification and prescribing; (5) modifications of administrative and disciplinary control designed to improve the working of medical benefit and the status of the insurance practitioner, and modifications of the terms of service designed to bring the remuneration into more definite relatic with the obligations imposed.

The report is local in the sense that it represen the views of a group of practitioners in Paddingto But it should prove of interest to other insuran practitioners in London who will be welcome at tl meeting. Copies of the report in printed pamphl form may be obtained for 2*s.* 6*d.* on application the hon. secretary of the Society at 23, Westbour Park-road, London, W.2.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lts. H. E. M. Martin and R. L. G. Proctor to Surg. Lt.-Comds.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg.-Comdr. J. B. Ronaldson, V.D., to be Surg.-Ca and Surg. Lt.-Comdr. J. Lorimer, V.D., to be Surg.-Comd

ROYAL ARMY MEDICAL CORPS.

The undermentioned Cols., having attained the age compulsory retirement, are placed on retd. pay: F. Irvine, late R.A.M.C., and L. N. Lloyd, late R.A.M.C.

Lt.-Cols. and Bt. Cols., from R.A.M.C., to be Col Temp. Col. A. C. H. Gray, vice Col. L. N. Lloyd, and Ahern, vice Col. F. S. Irvine.

Lt.-Col. O. Ievers to be temp. Col.

Maj. (temp. Lt.-Col.) W. F. M. Loughnan to be Col., vice Lt.-Col. and Bt. Col. D. Ahern

Maj. (temp. Lt.-Col.) J. J. O'Keeffe to be Lt.-Col., Lt.-Col. and Bt. Col. (temp. Col.) A. C. H. Gray.

Lt.-Col. J. D. Bowie, Reg. Army Res. of Off., to be M whilst re-empld. under Art. 507 (b), Royal Warrant Pay and Promotion, 1926, and relinquishes the rank Lt.-Col.

Maj. and Bt. Lt.-Col. A. D. Fraser to be temp. Lt.-

Maj. A. Irvine-Fortescue to be temp. Lt.-Col.

TERRITORIAL ARMY.

Lt.-Col. (Bt. Col.) P. J. Gaffikin to be Col. and to A.D.M.S., 44th (Home Counties) Div., vice Col. C Ponder vacated.

Capt. D. Ross to be Bt. Maj.

Capt. A. D. Rope (late R.A.M.C.) to be Capt.

N. H. Leslie (late Offr. Cadet, Aberdeen Univ. Cont Sen. Div., O.T.C.) to be Lt.

Supernumerary for service with O.T.C.—Lt. R. J. Pulvertaft (late R. Sussex R.) to be Lt. supern. for s with Med. Unit, Univ. of London. Contgt., Sen. D O.T.C.

ROYAL AIR FORCE.

Wing-Comdr. W. Tyrrell to be Group Capt., and Squa Leader K. Biggs to Wing-Comdr.

Flying Officer D. D. Watson resigns his short ser commission.

MENTIONED IN DESPATCHES.

The name of Capt. A. M. Simson, R.A.M lately attached Sudan Defence Force, has been brou to notice by the High Commissioner for Egypt and Sudan for distinguished services rendered in conne with the operations in the Nuer country during the pe between Dec. 8th, 1927, and Feb. 7th, 1928.

COLONIAL MEDICAL SERVICES.

The following appointments have been made rece by the Secretary for the Colonies: Dr. G. S. Escoff Medical Officer of Health, Jamaica; Dr. H. D. Cro Medical Officer, Kenya; Dr. J. G. Slimon, Health Offi Malayan Medical Service; and Dr. C. H. Howat and J. J. I. Phelan, Medical Officers for Tanganyika Terri and Zanzibar respectively.

West African Medical Staff.—Dr. A. J. Johnson, Med Officer.

HONORARY SURGEONS TO THE KING.

Lt.-Col. J. McPherson, I.M.S., and Maj.-Gen. J. Graham I.M. C.I.E., have been appointed Hono Surgeons to the King.

EXTENSION OF BRENTWOOD HOSPITAL.—T institution is about to be enlarged at a cost of least £10,000 by remodelling the executive offices building a new horse-shoe block on the garden. enlargement is necessitated by the growing pressure u accommodation.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of Belfast and Salford :—

Name of city and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality in childbirth.
Belfast .. .. (415,151)*	*21·4*	*15·6*	*1·40*	*1·05*	*4·3*	*1·9*	*112/33*	67	5·3
Salford .. .. (235,600)	16·6	15·4	1·32	1·32	5·0	1·1	125/—	68	3·8

* Census of 1926. Notified stillbirths per 100 live births—Belfast 2·9, Salford 4·3.

Belfast.

Dr. Charles S. Thomson took over the duties of medical superintendent officer of health on March 1st, 1930, and in his first report submits a comprehensive survey of the public health activities of the city which he hopes will be a foundation for subsequent reports. His first impressions are that Belfast has no serious slum problem and no grave housing question. It is also fortunate in its large number of parks and open spaces. He judges that overcrowding is relatively small, and bases this opinion both on the census returns of 1926 and the experience of his staff derived from visitation for various public health reasons and for routine house-to-house inspection. The water-supply was satisfactory in quality and quantity during 1929, and the possibility of shortage during an excessively dry summer will be removed by the completion of the large reservoir in the Mourne mountains during the next few years. Some of the many rivers and streams in the city are liable to pollution and remedial steps are being taken. Improvements of the sewerage scheme are in progress. In 1897 there were 27,000 privies; now there are only 284, mostly in unsewered outlying districts. The scavenging system is being improved on up-to-date lines. Only 44 smoke observations were made in 1929, but it has been arranged to take 104 observations in each of the four divisions of the city during the current year.

The many satisfactory features of the city from the point of view of environmental hygiene make Dr. Thomson optimistic as to the future, *if attention is* paid to the principles and practice of public health, domestically as well as municipally, and a determined effort is made to educate the public in the matter. There would seem to be no justification, environmentally for example, for the high infant and tuberculosis mortality rates. A scheme for dealing with the former, outlined in the report, includes the appointment of a whole-time medical officer, nine additional health visitors, the establishment of several new centres either to replace those in unsuitable buildings or to serve districts unprovided for, a large increase in free milk for children, and the establishment of an orthopædic scheme.

Salford.

Dr. H. Osborne reports that there was an increase of 65 in deaths from whooping-cough, of 149 from influenza, 165 from bronchitis, and 99 from pneumonia, as compared with 1928. Infant mortality increased from 106 to 125 mainly owing to an epidemic of diarrhœa. Diphtheria was more prevalent, 678 cases with 39 deaths. The type was more severe. Nearly all the cases were admitted to hospital and the case-fatality was 6·4 per cent. The medical superintendent of the hospital, Dr. W. Edge, was asked to immunise the staff at the Salford Royal Hospital, and about 20 general practitioners accepted the invitation to see the methods adopted. Dr. Edge also conducts immunisation clinics at two centres, but the response *is only small as yet.* A "*bed isolation*" ward was established at the hospital in January. 165 cases were admitted and there was no case of cross infection. The up-to-date X ray apparatus has been a great aid to diagnosis at the dispensary.

No great reduction in the tuberculosis mortality in Salford can be expected, Dr. Osborne says, until there is a vast improvement in housing conditions. He issues hundreds of certificates to overcrowded families applying for Corporation houses, but in *most cases without avail; 3000* houses are needed to rehouse the tenants of slums, but further housing provision is also needed to relieve overcrowding. The Health Committee can take no action for overcrowding in the 312 houses let in lodgings, and it is *obvious for lack of space that the new houses needed* cannot be built in the city.

A noteworthy feature of the report is the account of the first two years' working up to March 31st, 1930, of the municipal "ad hoc." V.D. clinic. Judged by every test *it* is an unqualified success. Since the removal from the Salford Royal Hospital the new cases have multiplied fourfold and the attendances tenfold. The staff is being increased to meet the extra work. About half the patients come from outside areas. Thirty-five per cent. of the new cases are non-venereal. The clinic is at the disposal of patients all day and every day. The new cases for last year numbered 2172, but the V.D. medical officer, Dr. E. Tytler Burke, will not be satisfied until *they reach 3000. The proportion of females to males* for syphilis is 1 to 3·4 and for gonorrhœa 1 to 5·9. This may be compared with 1 to 1·6 and 1 to 4·0 respectively for the country as a whole. Dr. Burke is clear that their scheme does not yet touch a sufficient number of women. *Less than half the new cases were* early syphilis—i.e., from primary sero-negative to late secondary. An investigation of the occupation of the new male cases shows that 10·3 per cent. are engaged in road transport and that 16·3 per cent. are seamen. *Dr. Burke considers that the growth* of mechanical transport with long journeys by lorry drivers has given rise to a problem on shore similar to that of the sailor. He suggests that provision should be made for the comfort of these men during their *long journeys. He goes on to point out the danger* of accidents when, as quite commonly happens in his experience, the drivers in charge of vehicles are suffering from grave syphilitic disease of the brain and spinal cord. In May, 1930, the Manchester *Watch Committee brought forward a proposal* to institute a medical test for such drivers. With regard to defaulters, these numbered in 1928–29 33 per cent. and in 1929–30 36 per cent. The follow-up letter to 720 defaulters brought no reply from 38 per cent., and *in 23 per cent.* was returned as wrong address. Nearly 30 per cent. resumed treatment. The male in-patient accommodation of six beds is inadequate, and Dr. Burke recommends 50 beds for men, women, and children at Hope Hospital, Pendleton. The establishment of *a local branch of the British Social Hygiene* Council for propaganda purposes is urged. The clinic is recognised by Victoria University as a teaching establishment and the post-graduate lectures were attended by 40 general practitioners.

The designated Milk Order is regarded as a *dead* letter, the price charged for milk from tuberculin-tested herds being prohibitive. Eighty per cent. of the milk sold is pasteurised, but not according to regulations. Of 453 mixed milks 9·7 per cent. were tuberculous. The milk from Cheshire farms gave a percentage of 10·8 and from Lancashire farms of 9·4. No improvement is expected until routine veterinary inspection is adopted and the farmers notify their cases. The public analyst urges the need for standards for certain classes of foods, notably jam and cheese. Among the interesting samples culled from his report are :—

> A home-made jam contained 42 parts per million of sulphur dioxide, artificially dyed, and made from imported pulp ; two samples of lemon cheese put up in small glass jars tied with parchment paper in imitation of a home-made article (one contained 38 per cent. of water and only 5 per cent. of butter, the other contained no butter but 18 per cent. of margarine) ; a diabetic flour which proved to be ordinary whole flour ; a sample of malt extract and cod-liver oil, containing 3·3 per cent. of cod-liver oil by weight.

An important development of the maternity and child welfare scheme was the opening of two new centres, "admirably suited to their purpose," the first being opened in February by Dame Janet Campbell.

A REVIEW OF SCHOOL MEDICINE IN 1929.

A SURVEY of the reports of school medical officers, many of which have received separate notice in this column, shows a general tendency for education authorities to follow the lead set in the most progressive areas, so that developments like orthopædic schemes, and those dealing with rheumatism, open-air instruction, and even stammering classes will soon come to be usual instead of exceptional. More attention, too, has been directed to sanitation and hygiene of school buildings, many of the newest erections being models of what a school should be.

Another feature of the year was the increased attention given to the pre-school child. The dictum that the elementary schools are "receivers of damaged goods" is being taken to heart, and many reports—e.g., Eccles, Colchester—deal at length with measures taken to prevent damage to the goods. Thus the coördination and coöperation between the school medical service and the general public health, notably the section that deals with maternity and infant welfare, has become more intimate. One step in this direction has been the joint appointment of medical personnel, one or more of the school doctors being also part-time officer of the infant welfare centre. In some county areas the new medical officer of health for a district has been appointed also to inspect the local schools, or the assistant to the county M.O.H. has been allocated to school work. School nurses who are public health visitors see the children at all ages, and school treatment clinics have been thrown open to pre-school children with proved benefit, especially in cases of squint and orthopædic defect. Further, there has been a beginning of the wider development of nursery schools and of nursery classes in the elementary schools.

The spirit of team-work is also seen in the practice, now almost universal, of including in the report of the school medical officer that of the organisers of physical training. Their activities are closely associated with those of the orthopædic staff ; as physical culture becomes more fully recognised as an integral part of education, the less will be the need of formal corrective work and surgical treatment. Several medical officers discuss the report of the Departmental Committee on the mentally defective, and the findings of Dr. E. O. Lewis. The main lesson has not been overlooked—viz., that the mentally defective are closely associated in origin with the backward and subnormal, and these are more numerous and more important—for they are more improvable and better worth improving. The fact is brought out by many investigators that the backward usually have high intelligence quotients, and owe their troubles largely to defects such as deafness, malnutrition, and neurosis. For all of these they need specialised medical care, but nothing has been done to organise such classes under the supervision of expert medical officers ; all that has happened as yet has been an arrest in the provision of new special schools for the mentally defective. As in previous years, there is still far too little accommodation for the epileptic, and scarcely any, apart from London, for victims of encephalitis lethargica.

Research has been carried on to the benefit of those engaged in it—senior medical officers (e.g., Notts) have emphasised this activity as an antidote to the stagnation of routine inspection—and to the advantage of school hygiene and of medical science as a whole. Subjects like the warming and ventilation of school buildings, on which valuable information has been obtained (Torquay, Brecon), are mainly of interest to those concerned, and the merits of ultra-violet ray therapy and artificial sunlight (Leeds), and of special window glass (Smethwick, Glasgow) appeal to a limited medical circle, as do indeed the valuable studies of overstrain and fatigue in scholars and in teachers (Leicestershire, London). Inquiries, however, into rheumatic heart disease (London, Bristol, and others), into the treatment of enuresis (Kent), and of otorrhea (Notts) are worthy of general attention.

Several medical officers find comfort in lookin back over the changes that they have seen in th last two decades. Verminous children were formerl so numerous and their condition so bad that visitor thought of an elementary school as a place of horror now there are some schools without a single ver minous child, and even when, as in the majority there are a few cases, they are so slight as to nee close inspection to detect them. Similarly, thoug progress in healthy dentition is less rapid, it i becoming rare to find a badly septic mouth in school-child, and the percentage of children wit clean mouths and sound teeth is steadily increasin (Sheffield, Cambridge), though many authorities sti need increased dental staff. And, with the sign of progress and development of facilities, there i evident a widening conception of the scope an purpose of school medicine, passing on from th removal of defects and care for the weakly to th education of the children in personal and soci hygiene, enabling them to develop their physique t its full potential capacity, and through the trainin of future parents to raise the level of national healt in years to come.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDE DEC. 27TH, 1930.

Notifications.—The following cases of infectiou disease were notified during the week :—Smal pox, 135 (last week 138) ; scarlet fever, 1567 diphtheria, 1107 ; enteric fever, 13 ; pneumoni 1022 ; puerperal fever, 33 ; puerperal pyrexia, 88 cerebro-spinal fever, 8 ; acute poliomyelitis, 3 acute polio-encephalitis, 1 ; encephalitis lethargic 8 ; continued fever, 1 ; dysentery, 10 ; ophthalmi neonatorum, 50. No case of cholera, plague, typhus fever was notified during the week. Th general lowness of the figures reported during holiday week cannot be taken as indicating an diminution of infectious disease.

The number of cases in the Infectious Hospitals of th London County Council on Dec. 30th–31st was as follows Small-pox, 218 under treatment, 3 under observatio (last week 167 and 4 respectively) ; scarlet fever, 185 diphtheria, 2082 ; enteric fever, 16 ; measles, 98 ; whoopin cough, 131 ; puerperal fever, 22 (plus 8 babies) ; encephaliti lethargica, 121 ; poliomyelitis, 2 ; "other diseases," 6 At St. Margaret's Hospital there were 12 babies (plus mother) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, includin London, there was no death from small-pox o enteric fever, 59 (1) from measles, 11 (2) from scarle fever, 15 (2) from whooping-cough, 33 (8) from diphtheria, 57 (10) from diarrhœa and enteritis unde two years, and 59 (15) from influenza. The figure in parentheses are those for London itself.

Seventeen deaths from measles occurred at Liverpool 9 at Bristol, 8 at Hull, 4 at Grimsby, 3 each at Birmingham Cardiff, and Swansea. Four fatal cases of diphtheria wer reported from Liverpool, 2 each from Ilford, Smethwick, Coventry, Derby, and Manchester. Diarrhœa accounted for 6 deaths at Birmingham and at Liverpool, 3 each at Birkenhead and Manchester.

The number of stillbirths notified during the week was 216 (corresponding to a rate of 51 per 1000 births), including 21 in London.

DIPHTHERIA IN SMETHWICK.

An epidemic of diphtheria in this county borough has severely strained the available accommodation. The number of notified cases began to rise about the middle of September, and from the week ending Sept. 13th to that ending Dec. 27th 168 cases were reported, the highest number in any one week being 26, during the week ending Dec. 20th. The epidemic arose in the most densely populated ward of the borough where overcrowding renders the isolation of contacts difficult or impossible. The type of infection has been severe, for the most part faucial; in three laryngeal cases tracheotomy was performed. There have been 19 deaths during the period mentioned, a case mortality of 11·3 per cent. The 24 beds reserved for diphtheria cases in the local isolation hospital were quite inadequate, but the neighbouring authorities of Birmingham (where the prevalence is not excessive) and West Bromwich were able for some time to deal with the excess cases. As the epidemic spread, accommodation was increased by emptying the tuberculosis pavilion and opening another ward for diphtheria, thus increasing the number of beds to 45. At the present time all these beds are full and a number of Smethwick patients are being treated at Birmingham, West Bromwich, and Halesowen and Stourbridge Joint Isolation Hospital. The usual precautionary measures were adopted and a propaganda campaign to induce the public to seek protection by toxoid-antitoxin inoculation is having good success. Considerable numbers are being immunised at the welfare centres, school clinics, and at the public health department.

The Registrar-General informs us that the certified cause of death of the boy belonging to Dagenham U.D. (see THE LANCET, Dec. 27th, 1930, p. 1429) was: (1*a*) acute myocarditis due to (*b*) diphtheria; (2) smallpox, not vaccinated. No post-mortem.

OBITUARY

AMY HODGSON, M.D., D.P.H. Liverp., M.R.C.P. Lond.

Dr. Amy Hodgson, who died in London on Dec. 19th at the age of 45 years, had devoted herself without stint to the welfare of babies and children. The daughter of Joseph Uttley Hodgson, she was educated at Liverpool High School and University, qualifying there in the middle of the war period and taking the higher distinctions at a later date. After acting as house physician to the Liverpool Royal Infirmary, she became a recruiting medical controller of Queen Mary's Auxiliary Corps, and was mentioned for her services. In 1921, after taking the D.P.H., she was assistant medical officer of health at Huddersfield. A study of vitamin deficiency in relation to the development of rickets, published in our columns at this time, was of a type commoner now than it was then. After a survey of the work of Mellanby, Corry Mann, Dalyell, and others, and an analysis of 120 cases of rickets observed at infant welfare clinics in Liverpool, she came to the conclusion that there must be some common determining factor, unrevealed by ordinary clinical or bacteriological evidence. Dr. Hodgson herself believed she had found sufficient indication of a lowering of alkali reserve in cases of active rickets. Her later publications were of a more general character. She resigned her appointment at Huddersfield to take a resident post at the Infants Hospital in Westminster, combining this with charge of a welfare centre at Caversham-road and a clinical assistantship at Great Ormond-street.

Dr. Eric Pritchard writes: "I first met Dr. Amy Hodgson in 1922, when I entered into correspondence with her about her work in Liverpool on acidosis in children and its association with rickets. Subsequently, I invited her to take part in a discussion at a London medical society on the same subject, and on this occasion, knowing her resourcefulness and many-faceted knowledge, I made her a tentative offer to come to London and help me to reorganise the Infants Hospital, to which I had just been appointed medical director. At that time the fortunes and prospects of the hospital were not very bright, partly on financial grounds and partly owing to the disrupting effects of the war. Although at that time Dr. Hodgson was assistant medical officer of health at Huddersfield under Dr. S. G. Moore enjoying a comfortable salary and congenial work, she welcomed my proposal as an opportunity of engaging in the clinical work which attracted her, although it meant financial sacrifice. There was then no residential staff, no pathologist, and no dispenser at the hospital, but the prospect of fulfilling all these offices had no terrors for her. She faced all difficulties and triumphed over them and, in spite of many routine duties, still found time to pursue in the research laboratory the investigations on acidosis begun in Liverpool. In September of the following year, when improved resources made it possible to appoint a resident medical officer, Dr. Hodgson became registrar and pathologist, which post she held until the end of 1926, when she was taken seriously ill and resigned her connexion with the hospital. From this illness she never properly recovered, although she made heroic efforts to take up the threads of her work elsewhere. Had she enjoyed better health I feel assured that she would have made a considerable name for herself as a pædiatrician."

EDWARD HENRY BALDOCK, M.R.C.S. Eng.

Dr. Baldock, who died at Whitchurch, Herefordshire, on Dec. 22nd, after a short illness, had retired two years ago from a busy practice in Hereford extending over 24 years. Qualifying M.R.C.S. from Guy's Hospital in 1891, he went out to Korea as medical officer to the Customs and to the British Legation at Seoul. After his marriage to a Canadian medical graduate, he travelled, with his wife, in China and Japan, where they both rendered medical service during the Boxer trouble and the Russo-Japanese War. Returning to England in 1904, he succeeded to the practice of Dr. J. B. Fitzsimons at Hereford, becoming city police surgeon and medical officer to the isolation hospital. During the war he was one of the superintendents of the Beechwood Convalescent Hospitals. In many directions, social and philanthropic, he was supported by his wife who was for 15 years a poor-law guardian. Both were keen musicians, Dr. Baldock being an accomplished violinist and a leading member of the local orchestral and choral societies.

CORRESPONDENCE

FIBROSITIS: ITS CAUSATION AND TREATMENT.

To the Editor of THE LANCET.

SIR,—The importance of the causation and treatment of fibrositis has been clearly shown by the paper by Sir Thomas Horder at the Chelsea Clinical Society,[1] and the speeches which were made by some of those present. It would not be advantageous in the space at my disposal to discuss all the possible causes of fibrositis, but as there appears to be a doubt in the minds of some as to the value of bacteriological examination and treatment, I am sending this record of my personal experience which should be helpful.

In 1926 I travelled through from London to Cannes by the usual route, and arrived there about midday on Jan. 19th. There was nothing unusual to mark the journey and my health appeared to be normal on the day of arrival. On the following morning, after a good night's rest, I awoke about 7.30 feeling that my hands were uncomfortable. They were both generally swollen and stiff, but not painful. The swelling was œdematous, most marked about the joints of the fingers, and in the palms of the hands, and there was little difference between the two hands. There was no redness but slight tenderness, and I was able to dress slowly without assistance. Temperature about 100°–101°, pulse 70–80, somewhat irregular. As there was no improvement in the general condition of slight fever, whilst palpitation was readily induced, the advice of a medical friend was obtained a few days later, who diagnosed it as "rheumatic gout" or "gout." During a stay of six weeks in Cannes there was some improvement in the general swelling of the hands, but it became more evident that the flexor ligaments of the fingers (not thumbs) and the palmar fasciæ were the most affected. The general health was indifferent, there being frequent cardiac palpitation on exertion and also when sitting quietly. The medicine prescribed relieved the general malaise, but did not arrest the palpitations. The temperature became normal after the first ten days. After return to town, although no cause was to be discovered, treatment was of advantage inasmuch as it relieved symptoms but did not effect improvement in the appearance of the joints, whilst the palmar fasciæ were becoming more typical of the condition recognised as Dupuytren's contraction. Some months later, progress being unsatisfactory, it was suggested that bacteriological examination should be made of the intestinal ejecta. This was done and a variety of Morgan's bacillus isolated. From this a vaccine was made and two injections given, at an interval of seven days. Improvement followed, and became more evident after a third injection. The general health improved, palpitation no longer caused trouble, and the swelling of the hands and joints diminished, leaving the fingers somewhat flexed. Meanwhile the fasciæ of the palms of the hands showed some irregular, nodular thickening with contraction especially on the right side. Here was an instance of so-called "rheumatic gout," which was really a fibrositis of the ligaments of the fingers and palmar fasciæ followed by a typical "Dupuytren's contraction" of the palmar fasciæ. The fact that it was arrested, and unpleasant symptoms cured, after discovery of its bacterial origin, is of much interest to me, especially as it was a personal experience.

In 1893 THE LANCET[2] published a paper for n on Some Unusual Conditions of the Hands. In th communication, after mentioning a very advanc case of Dupuytren's contraction, I ventured to expre my agreement with the suggestion made previousl by Mr. William Anderson in his Hunterian Lectur at the Royal College of Surgeons,[3] who when discussin the causation of this form of contraction of tl palmar fascia, suggested the possibility of bacteri infection. Not long after my paper was publishe I received a letter from an eminent physician (date April 9th, 1893), which is still in my possession, i which the following comments were made:—

> "Long-continued observation has convinced me of tl fact that Dupuytren's contraction is a disorder almost, not entirely, confined to persons of gouty inheritance . . when I speak of gout I am not thinking of uric acid. Th bacterial theory of Dupuytren's finger, &c., I believe to l utterly absurd."

It is not often that one can confirm so definitely th value of a suggestion, as in this instance that o Mr. Anderson, and my case shows the importanc of a more regular and thorough bacteriologica examination. Dupuytren's contraction is a ver crippling deformity and one in which surgery has no yielded results which can be considered satisfactory The desirability for publication of this observation i strengthened by the following paragraph in th recently published third edition of one of our bes known works on surgery,[4] in which, when speaking o this form of contraction of the palmar fascia, it i *stated*:—

> "In some instances this is hereditary, while there is n doubt that a gouty or rheumatic tendency plays a par in it; many other causes have been assigned to it, such a syphilis and local septic infections, but there is no evidenc of these."

I am hoping that the institution of the special clinics for the treatment of "rheumatism" will dc much to differentiate the diseases now grouped unde this heading. An early and thorough investigation even in comparatively mild cases, should include a bacteriological examination, not only of probable causes, such as suppurating discharges, but also of intestinal ejecta.[5] Unless this is done there will be many cases which will not be properly treated before the changes in, and surrounding, joints are intractable and crippling.

I would like to see the results of the full bacteriological examination of a series of the sufferers from lumbago and sciatica. I have seen pyorrhœa satisfactorily treated in a case of painful joints with some swelling and slight temperature, but relief was not obtained until after X ray examination had revealed an abscess at the apex of a tooth which was apparently healthy, and this tooth was extracted. Rapid recovery followed. Again, in a case of fibrositis with limited pyorrhœa this was regarded as the cause, and treatment carried on for months with but slight improvement. A variety of Morgan's bacillus was found when search was made for it, but the patient is left with deformed and stiffened hands and feet, which localised treatment has alleviated but to a limited extent.

I am, Sir, yours faithfully,

WILLIAM HY. BATTLE.

Harley-street, W., Jan. 3rd, 1931.

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[1] THE LANCET, 1930, ii., 1399.

[2] THE LANCET, 1893, i., 781.

[3] THE LANCET, 1891, ii., 57.

[4] Romanis and Mitchiner, 1930, third ed., p. 691.

[5] See also Fibrositis, Drs. Clayton and Livingston, THE LANCET, 1930, i., 1423.

ACUTE MYELOGENOUS LEUKÆMIA.

To the Editor of THE LANCET.

SIR,—The interesting cases recorded by Dr. Easton in your issue of Dec. 27th, 1930 (p. 1394), are so valuable a contribution to the subject that I am tempted to break a friendly lance with him over the interpretation thereof. The cases which Dr. Easton describes are all good examples of acute myeloblastic leukæmia. In this group the predominant initial symptom is always a sloughing throat, and high leucocytosis and enlargement of the spleen are usually absent because death occurs before these have had time to develop. The blood picture, incidentally, is identical with that found in the final stage of myeloid leukæmia of the chronic type.

The conception of septic infection was, I believe, the first explanation put forward of the pathology of myeloid leukæmia; at all events it has appeared on the stage intermittently for about half a century. It is very plausible, but there are many difficulties in its adoption, and I do not feel that Dr. Easton's cases really support the contention that coccal infection is the cause rather than a concomitant of the leukæmia. Apart from the usual arguments that *hæmolytic streptococci* can be found in almost every sloughing throat, and in the fauces of many apparently healthy people, that infection of experimental animals therewith gives rise to a definite blood picture which is not that of leukæmia, and that if we except the infectious leucosis of fowls which is a disease sui generis leukæmia has never been induced by inoculation, there are some additional points against the infective theory to which I would draw attention.

In normal human beings and in cases of septic infection the administration of a leucocytic stimulant such as sodium cinnamate or nucleinic acid is followed by a polynuclear leucocytosis without primitive forms; in leukæmia no such response occurs. Similarly, the injection of a T.A.B. vaccine gives rise to an increase in the antibody titre to these organisms; in leukæmia this is absent. Primitive granular cells do not appear to be phagocytic or to be capable of forming antibodies. I have frequently used these tests in the diagnosis of doubtful cases of leukæmia. Recently Knott and Watt (*Brit. Med. Jour.*, Dec. 13th, 1930) have shown that the proportion of phagocytic cells in the blood is a valuable guide to the utility or otherwise of deep X ray therapy in the treatment of leukæmia. The explanation of the sloughing throat and other septic manifestations would appear to be that in leukæmia the bactericidal properties of the blood are so markedly diminished that streptococci and any other bacteria gain an easy hold on the patient. Sepsis is, therefore, the result and not the cause.

In practice the conception of sepsis as a cause of leukæmia is not without danger. In a case which I saw in consultation some time ago a dental surgeon was accused of having caused leukæmia by extraction of teeth from a septic mouth. The patient was suffering from acute myeloblastic leukæmia and it was only the blood picture that saved the surgeon from a threatened action by the relatives. We have difficulties enough in coping with the diagnosis and treatment of acute septic infections without having leukæmia added to our pitfalls.

To my mind the chief difficulty in understanding leukæmia lies in the fact that the patients are so seldom seen before the characteristic clinical signs and blood picture are well established, and yet the disease must obviously start, as it were, from scratch. I would, therefore, with Dr. Easton, plead for the publication of more acute cases, and this would be easier if the blood were examined histologically, as it should be, in all cases of acute sore-throat and pyrexia of unknown origin. Until then, however, I advocate research rather than the restatement for which he calls. It is as valuable to determine what is not, as what may be.

I am, Sir, yours faithfully,
A. KNYVETT GORDON.

Bedford-square, W.C., Dec. 27th, 1930.

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—As one of the 50 members of the tuberculosis study group which visited Canada this year, the predominating feature to me was the results obtained by pasteurisation. In a document entitled Some Facts Concerning the Tuberculosis Situation in Toronto, given to the group by the Public Health Authorities, there appears the following:—

> "Ranking high among the preventive measures employed against tuberculosis is the city milk pasteurising programme, effective since 1914, under the terms of which the total milk-supply with the exception of less than 1 per cent. is adequately pasteurised under official supervision. The very small quantity not pasteurised and sold under conditions warranting its certification as defined by law. *As a result bovine tuberculosis presents no problem in Toronto.*"

I therefore was delighted to see the letter of Lord Dawson and his eminent colleagues. If Colonel Maddock lived in a Utopian country with Utopian cows and farmers, we would agree with his academic letter. Unfortunately, we do not. At Winsley sanatorium we have always pasteurised our milk and they have always done so at King Edward VII. Sanatorium, Midhurst. What we all want is a practical way of reducing tuberculosis and, as Lord Dawson points out, no one wants to put the clock back.

I am, Sir, yours faithfully,
J. D. MACFIE.

Winsley Sanatorium, near Bath, Jan. 6th, 1931.

To the Editor of THE LANCET.

SIR,—One important point has been omitted in the discussion of Lord Dawson's manifesto on the pasteurisation of milk. While it can be admitted that any damage done to the vitamins in the process of pasteurisation can be made good by the addition of concentrates to the diet, it is not so easy to make up for the loss of soluble calcium. The work of Daniel and Stearns has demonstrated that children fed on pasteurised milk exhibit a negative calcium balance in some cases in contra-distinction to children fed on raw or dried milk. Work in this country is being carried out on the gain in weight of infants fed on Certified and pasteurised milk. The children fed on unpasteurised milk show a very definite advantage over those fed on pasteurised milk. Before the profession as a whole endorses this manifesto every precaution should be taken to ensure that the best method of providing a cheap, clean milk for children is provided by the process of pasteurisation.

I am, Sir, yours faithfully,
Bristol, Dec. 31st, 1930. FRANK BODMAN.

A HOME AT SAN REMO FOR INVALID LADIES.

To the Editor of THE LANCET.

SIR,—I want to bring to the notice of your many readers a home for invalid ladies of limited means, who earn their own living, situated [illegible] Remo, Italy, a spot which is considered [illegible] best all-round climate on the Riviera. The Villa Emily was built by an English artist for his own use and is a commodious house in a large sheltered garden. All the rooms face south and wide verandas run almost the entire length of the two floors. The object of the institution, which was started over 50 years ago and deserves to be better known, is to provide a comfortable home for ladies in ill-health, who need a winter in a warm sunny climate to fit them once again for their duties. It is under the patronage of Princess Beatrice, is run by an English committee, and is in the charge of an experienced trained matron with trained nurses under her. The home has been extensively renovated and has central heating. Each lady has to pay £2 a week. This sum is quite inadequate to cover expenses and the annual deficit is made up by generous friends. Medical attendance and nursing are given free.

I am, Sir, yours faithfully,

San Remo, Dec. 15th, 1930. L. N. HESKETH BIGGS.

"HAPPY MARRIAGES."

To the Editor of THE LANCET.

SIR,—The question whether most marriages prove, in the long run, happy or unhappy is, nowadays, a popular subject for discussion. The protagonists on each side argue hotly but base their arguments, apparently, either on the broadest generalisations or else on a very limited personal experience. One reads, for example, of a gynæcologist who says that "in his experience" most marriages are unhappy. May I suggest that a specialist is hardly the person to be very familiar with the normal? His work deals entirely with the abnormal. It seems that the general practitioner, who sees a good deal of the families in his practice in health as well as in disease and who knows the intimate secrets which patients do not readily disclose to specialists, is perhaps the only person with sufficient and unbiased knowledge to supply exact information on this subject.

It would, I think, be of considerable value to students of social problems and writers on morals if sufficient data could be obtained. I have recently examined all the names of married couples appearing in the books of my practice and subjected them to a critical analysis. Omitting all those whom I do not know with sufficient intimacy, and also all who have not been married longer than four years, I find there are 188 couples about whose married lives I have definite information as to their happiness.

If these are divided into four groups: (*a*) those who are fundamentally happy; (*b*) those who are moderately happy—i.e., whose happiness depends on the favour of fortune; (*c*) those who are moderately unhappy—i.e., whose unhappiness might be turned into happiness by material circumstances; (*d*) those who are fundamentally unhappy—that is to say, whose unhappiness is incurable and beyond mere material conditions; I obtain the following: (*a*) 50 per cent.; (*b*) 14·5 per cent.; (*c*) 15·5 per cent.; (*d*) 20 per cent. These figures, I should explain, are derived from a middle-class surburban practice.

I should be much interested if others in general practice in different social spheres would supply similar analyses. By such means, and by them *only*, can definite and fairly reliable information on this interesting subject be obtained. I may add that I was very much surprised by my figures as I had got the impression that most marriages were a failure—*which shows the danger of forming opinions* on insufficient data!

I enclose my card and remain, Sir,

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Dec. 29th, 1930. W.

MEDICAL NEWS

Royal College of Surgeons of England.

The following lectures will be delivered at the College at 5 P.M. on the days indicated: Jan. 19th, Mr. Victor Bonney: The Results and Technique of Myomectomy; 21st, Mr. J. Basil Hume: The Pathology of Diaphragmatic Hernia; 23rd, Mr. J. W. Tudor Thomas: Successful Grafting of the Cornea in Rabbits; 26th, Mr. D. H. Patey: The Pathological Basis for the Treatment of Varicose Veins by Injections, and its bearing on the problems of Thrombosis: 28th, Mr. J. Paterson Ross: The Treatment of Cerebral Tumours with Radium, with an account of Experiments made to study the effects of Radium upon Cerebral Tissue; 30th, Dr. Donald Hunter: Changes in the Bones in Hyperparathyroidism and Hyperthyroidism; Feb. 2nd, Prof. H. H. Woollard: The Potency of the Pharyngeal Entoderm; 4th, Mr. T. P. Dunhill: Malignant Disease of the Thyroid Gland—the relation of the incidence and spread to its embryology and prognosis.

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NOTES, COMMENTS, AND ABSTRACTS

OMEN MENTAL DEFECTIVES AND CRIME:

A PRACTICAL STUDY.*

y LETITIA FAIRFIELD, C.B.E., M.D. EDIN., D.P.H., BARRISTER-AT-LAW.

MUCH of the prevalent discussion on problems of ental deficiency is purely theoretical and has little elation to the human material with which it has to eal. It may therefore be of some interest to study ne aspect of the question—the relation of mental eficiency in women to crime—from a practical angle, nd to inquire how far certain pre-conceived notions re supported by facts. A survey has therefore been ade of all the defective women notified to the local uthority as having come into definite conflict with he law over the five years 1925–29 in the London rea where, as is generally acknowledged, the Mental eficiency Acts are actively in operation.

The Mental Deficiency Acts, 1913 and 1927, place n the local authority an obligation to ascertain such ental defectives in their areas as are: (1) neglected r delinquent; (2) under the care of the poor-aw, having given birth to an illegitimate child; (3) ll-treated by persons in charge of them; (4) defectives nder the age of 21 whose parents wish them to eceive further training; or (5) children, about to leave special school, who have been notified by the ducation authority as needing further care. Where he education authority has faithfully performed its tatutory duty of ascertaining which children in its chools are mentally deficient and providing them with a suitable education, the vast majority of efectives in a district will come under the care of the uthorities under Clauses (4) and (5)—i.e., before any ocial disaster has occurred. We are here concerned, owever, with the handful of women and girls who ame to notice in the capacity of delinquents.

Ascertainment among Delinquents.

The procedure in London is as follows. Any prisoner who arouses suspicion of mental abnormality, either by her behaviour at the time of arrest or in court, or who is already known to the police or probation officer as mentally weak, may on the order of the learned magistrate be remanded in custody for a report on her state of mind by the prison doctor. If the doctor reports that in his opinion the woman is certifiable under the Mental Deficiency Acts, she is on her next appearance in court again remanded in order that the responsible local authority (in London, the County Council) may be asked whether it will accept and deal with the case. The L.C.C. medical officer then visits the prison and examines the defective, and if he concurs in the diagnosis he gives evidence to that effect when the prisoner is again brought before the court. The learned magistrate may deal with the case under Section 8 of the Mental Deficiency Act, 1913—i.e., he may postpone passing sentence and direct that a petition be presented to a judicial authority with a view to obtaining an order that the defective be sent to an institution or placed under guardianship or, in lieu of passing sentence, he may himself make such an order, the latter being the more usual and simpler procedure. This clause applies only to persons convicted of an offence punishable, in the case of an adult, with penal servitude or imprisonment. Section 9 of the Act empowers the Secretary of State to transfer any prisoner found to be defective while undergoing sentence either to any institution where managers are willing to receive them, or to guardianship. This section is useful for such defective prisoners—fortunately rare—as have escaped the notice of the court before or during trial.

For certification the prisoner must come within one of the four categories of the Mental Deficiency Acts—i.e., idiot, imbecile, feeble-minded, and moral defective—and it must be established to the satisfaction of the court that the defect arose before the age of 18 years. The diagnosis of mental status is made by the aid of standardised intelligence tests, some modification of the original Binet-Simon scale, such as Burt's London scale or the Stanford revision. Simple performance tests and other tests such as the Porteous series are also used. Much has been said in ridicule of psychological tests, but without their use the whole discussion of mental deficiency as a social problem would become meaningless. No two persons could agree what class of individuals they were talking about, nor could they convey in words the defective's mental relationship to normal persons. It should be—but is not—unnecessary to point out that the diagnosis is not made by the tests but by the person who uses them. They are servants, not masters. In a recent *cause célèbre* a distinguished alienist was referred to contemptuously by counsel as a "mental certifier." He retorted with dignity, "I am not a 'certifier,' I am a physician," and it is on that basis alone that every doctor should give evidence.

Learned magistrates differ considerably in the evidence they require as to the essential point of defect "before the age of 18"; usually if it proves impossible to ascertain the early history of the patient they accept a statement from the doctor that in his opinion the defect is such that it *must* have existed before 18 years; as an expert witness he is entitled to draw such an inference from his observation of the patient. Nowadays this is rarely a stumbling-block in practice, as the tests at our command are usually adequate to make a diagnosis clear, but the doctor may sometimes be in difficulty over an elderly person of obscure antecedents whose mental enfeeblement might well be attributable to the mild dementia induced by drink and privation. It is important here to adhere to the terms of the Statute, even at the price of occasionally losing hold of a patient who would unquestionably benefit by care and control.

The conditions of the examination are such as to give every possible chance to the prisoner. Recently a magistrate in a case in which I was giving evidence expressed his surprise and pleasure that the prisoner had been seen by two specialists. In fact all prison cases are seen by at least two independent experts, the prison doctor and the L.C.C. medical officer; the notes are discussed by the latter with the head of the department and a further opinion can be obtained if there is the slightest doubt. The prison authorities kindly permit a prolonged interview with the prisoner under most favourable conditions, and the certifying officer has the benefit of information from the experienced staff who have had the woman under observation, and of access to previous records. A school history has usually been obtained by the prison authorities; if not, it is procured later, if at all possible. In London the certifying officers are also dealing with school-children and have access to the schools and all reports on school-children, normal and subnormal. The records of ex-special school-children go back over 30 years.

If the woman is considered certifiable, a trained social worker on the local authority's staff visits or corresponds with the home and with any recent employer or social worker who has had the girl under her care. In fairness to the prisoner, great efforts are made to get a complete picture of her upbringing and career, not only with a view to accurate diagnosis but also to determine whether institutional treatment is necessary. Particular attention is paid to any allegation that she has held good employment or has lived steadily and peaceably under certain conditions. The principle applied throughout is that certification under the Mental Deficiency Acts is as grave a matter for both patient and doctor as certification under the Lunacy Acts; both result in deprivation of liberty, and the reasons for such a step ought to be carefully established.

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* Read before the Medico-Legal Society on Oct. 23rd.

A Five Years' Review of Defective Delinquents.

In the five years under review, 78 notifications of alleged defective women were received from the London magistrates and from the women's prison. Of these, 20 were considered by the prison doctor and the Council's certifying officers to be not defective, while 58 were deemed certifiable. If this average of 11·6 cases per annum in a population of over four million seems extremely low, there is reason to believe that the cause is to be found in the careful ascertainment and preventive supervision of defectives in the London area rather than in any lack of zeal in searching out defective criminals. It should also be noted that the Acts do not cover all mental abnormalities but only those coming within a certain definition. The number of weak-minded and eccentric individuals who come in conflict with the law is, of course, very considerable, but they cannot yet be dealt with under any specific Act.

The *ages* of these 58 women at the time of arrest were as follows:—

Under 20	25 cases.	Under 50	2 cases.
,, 30	23 ,,	,, 60	1 case.
,, 40	6 ,,	,, 70	1 ,,

The fact that almost five-sixths of the whole were under 30 shows that the administrative drag-net is acting effectively. It is, of course, most important in the interests both of the women and of the community to put them under care before they become confirmed in criminal habits, while training may be effective and before they have formed new family obligations. As psychologists have also found in America, mental testing is far from reliable in older men and women of degraded life; these people are most suspicious and inaccessible and, even when their coöperation is secured, it is often hard to say whether poor response is due to amentia or dementia.

The *home background* of the women was investigated wherever possible by visits from a trained social worker, or by correspondence if the girl came from the country. In eight cases the girl had been reared an orphanage; 16 cases came from definitely bad (not merely poor or ignorant) homes, 29 were from apparently good homes, and information was insufficient for classification in five cases. That exactly half came from ostensibly good homes is surprising, but a little experience of more intensive work with delinquent children has taught me how much mental strife and misery may hide beneath a respectable family exterior. Lack of appreciation of a girl's innate dullness is common, and of itself often causes serious discord and revolt, even in families where other children have been reared successfully. The stories of the little group of ex-orphanage pupils suggested that more attention might be paid to the detection and after-care of defectives in some of these institutions. The large orphan societies are now making very full use of the Mental Deficiency Act for the permanent protection of their charges.

School records were carefully ascertained in every case, either from the teachers or from relatives. It was possible to group the girls into two divisions—i.e., those who were recognised as defectives in childhood by the school authorities and those who were not.

Recognised as Defective.

London girls.	Special school	10	14	21
	Industrial school	1		
	"Moral defective"	1		
	Too old to have been to special schools	2		
Country-bred girls.	Special school	2	7	
	Elementary school	5		

Not Recognised as Defective.

London girls	18	37
Country girls	19	
Attainments below St. II.	14	
Above St. II. in reading	23	

23 of the 58 had arrived in London less than one year ago.

These figures are probably the most important in this paper. Their most striking feature is the extraordinarily small number of ex-special schoo girls who get into trouble with the police. For ove 20 years London has had a steady population c between 5000 and 7000 children in its special school for mental defectives, about half of them being girl Out of the thousands of ex-pupils who must b scattered in the population only ten emerge criminals in five years. The after-care of defectiv is so thorough that I doubt if many cases who ha made police-court appearances would be missed, a the test must be considered a fair one. An interesti confirmation of this view comes from Birmingham where the after-care of ex-special school-children also very good. In 4813 cases under observation ve little delinquency could be found, though the polic court files had been searched for five years. Mo of the offences were extremely trivial.

Another group which excites comment is that 14 who had left elementary school with attainme less than those of a child of 8 (some did not ev know a letter) and yet had apparently escaped t notice of the school authorities. Whether they w the victims of foolish teachers who hoped they wo "grow out of it," or of misdirected economy wh refused to make special educational provision, not clear. They include, unfortunately, two of t *married women convicted of cruelty to their childr* whose sad plight need never had arisen if legal p visions had been utilised and preventive care had be given from school-days onwards.

OCCUPATION, PARENTAGE, AND OFFSPRING.

The previous *occupations* of the 58 women w confined to low-class domestic service, factory wo and odd jobs. Six had had no previous occupat but had lived by prostitution and pilfering. T industrial inefficiency of all the women with exception was very marked and was in some cases determining factor which brought them into the ha of the police. Such unfortunates live a "harr existence," constantly losing jobs for reasons o which they have little real control and constantly loggerheads with relatives for being unable to k work.

In view of the statement still frequently made t 50 per cent.[2] of prostitutes are feeble-minded, i important to note that only 19 of the women, includ three married women, had been promiscuous gravely immoral. An interesting confirmation of estimate was given by one of the senior proba officers of London who recently told me that " feeble-minded prostitute has practically vanished the streets of London, a very different state of aff from 30 years ago!" It should be added that th poor women seem unable to hold their own in thi in any other occupation, and their stories are pit records of exploitation and squalor. Only six them, however, had suffered from venereal diseas

The *racial aspect* of deficiency is very promin to-day, and this group of delinquent defectives mi be expected to provide sensational figures.

Offspring.—Of the 50 unmarried women nine borne children:—

6 had borne 1 child each	6
1 ,, ,, 2 children	2
2 ,, ,, 3 ,, each	6
Illegitimate	14

Of the eight married women:—

3 had borne 0 children	0
1 ,, ,, 1 child	1
1 ,, ,, 3 children	3
1 ,, ,, 4 ,,	4
1 ,, ,, 5 ,,	5
1 ,, ,, 7 ,,	7
Legitimate	20

Of the 34 children, eight were dead at the time mother was arrested. Three only of the children

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[1] Report of the Birmingham Special School After-care S Committee. 1930.

[2] It is significant that most of these figures come from count where some form of the "maison tolerée" system is in existe A feeble-minded girl is the ideal occupant of such an establ ment—from the point of view of her employers.

known to be defective and the mentality of two more was doubtful, but information was very incomplete, as many of the children were in the care of the guardians or of relatives at a distance. Of the 32 London girls it was possible to say definitely that they had only produced two defectives among their offspring who had attained school age.

Information about *family histories* was insufficient to justify an opinion as to how many of the parents of the 58 prisoners were themselves defective. In at least 20 instances there was evidence of grave social incapacity and moral failure on the part of one or both parents, but he would be a bold diagnostician who would say that such failure in persons usually not seen and often long since dead was due to mental defect. I am aware that diagnoses of this kind are often made and are indeed the basis of much popular "eugenic" lore, but I am entirely sceptical of the value of such pedigrees. An interesting feature of this survey is the light it has thrown on the difficulty and expense of elucidating a "family history" worth the paper it is written on. Careful inquiry has not brought to notice any instance where the parent of a [illegible] defective woman was certified, and in only three instances had a sibling been certified or given sufficient evidence in his behaviour to justify a diagnosis of deficiency. The numbers dealt with are so small that the figures have little statistical value, but they are not so unusual as might be imagined.

CRIMES AND CULPABILITY.

The following table shows the *nature of the offences* with which the women were charged and the *mental age* of the culprit.

Mental Age with Relation to Nature of Offence.

Mental age ..	6	7	8	9	10	11	12	Total
Larceny	—	—	8	6	2	3	1	20
Wandering, begging	2	4	1	7	2	1	—	17
Violence to person or property	1	—	—	3	1	—	1	6
ndecency	—	—	1	2	—	—	1	4
Attempted suicide ..	1	—	—	—	—	—	3	4
Cruelty to children ..	—	1	2	—	—	—	—	3
Attempted murder..	—	—	—	—	1	—	—	1
nfanticide	—	—	—	1	—	—	—	1
Manslaughter	—	—	1	—	—	—	—	1
Murder	—	—	—	—	—	1	—	1
—	4	5	13	19	6	5	6	58

It will be noted that 32 of the 58 fall within the medium grade feeble-minded group—i.e., those who can usually "float" in the population, given good home support and suitable training, but have great difficulty in coping with any crisis on their own initiative. The table bears out the contention that the low-grade defective in London is adequately protected and is not a social danger. The few exceptions here shown are country cases or elderly women who had escaped the care of the Mental Deficiency Acts. Moreover, these imbeciles and low-grades do not contribute illegitimate children. A mental rating of 10, 11, or 12 years in formal tests would not, of course, in itself justify a diagnosis of mental deficiency. Mental tests are, however, not the only touchstone of intelligence, invaluable as they are for providing objective standards by which to compare individuals; in every case in this series the diagnosis has been subsequently confirmed. The 10- and 11-year-old groups here were undoubtedly feeble-minded, but mainly owed their superior rating to the fact that they scored unduly high on verbal tests. The 12-year-old group comprise most of those subsequently transferred to mental hospitals and one victim of encephalitis lethargica. These "12-year-old" women showed a long history of irrational, violent, and incorrigible conduct, without any reasonable motivation and not amenable to training or punishment. Certification under the Lunacy Acts had been considered and definitely rejected as wholly impossible, though it was suspected, correctly, that the mental instability would subsequently develop into a psychosis. Every effort was, of course, made to exclude any cause for their irresponsible behaviour other than innate mental abnormality.

The *culpability* of the prisoners varied very greatly, as it presumably does among their normal companions, and it had little relation to the offence with which they were charged. For example, an old woman charged with the manslaughter of her daughter by neglect proved too confused and ignorant to grasp properly the gravity of her position or even what she was supposed to have done wrong. Two of the three married women convicted of cruelty were in the same situation, and of the same type was an "attempted suicide," a little servant girl (earning 1*s.* a week and her mistress's old clothes) who had decided to end her life in Hyde Park after a domestic row but repented after licking the cork of the lysol bottle. On the other hand, some of the girls were greedy young thieves or prostitutes who definitely preferred snatching a living how they could to any effort at work. Most of them, whether vicious or merely bewildered, were of trivial importance as criminals, and required care and protection mainly for their own sake or that of their relatives. Fifteen of the 58, however, might fairly be described as pests to the community to a greater or lesser degree, while seven of these 15 constitute a group of really dangerous "moral defectives" (though only one was certified as such), each of them worthy of study if space would permit. Four had made attempts at murder and had a long history of irrational violence to persons and property, their victims being usually inoffensive relatives or persons who had befriended them. One of this group of 15 was an encephalitic, who showed very well the typical impulsive tendencies and lack of inhibition with little disturbance of intellectual powers. Four of the others gave rise to strong suspicion (subsequently confirmed by the medical superintendent under whose care they came) that their mental state was definitely psychotic. The border-line between congenital amentia and the schizophrenias is sometimes a narrow one—indeed, the underlying pathological condition may be very similar—and it is not easy to find the appropriate label. All these girls gave a history of a "difficult childhood," sullen, vindictive, irresponsive to affection, with a marked increase of instability at puberty, showing itself in violence, strong sexual or homosexual trends (sometimes in the same individual), and incapacity for settled work and a gradual "retreat from reality" into a world of phantasy. How these girls stand under any legal definition of responsibility is disputable, but it is impossible to deal with them without feeling that lack of ability to bring their actions under the control of reason is due to mental disorder, not to any deliberate fault of the will. That they need care and control for their own good and that of others is certainly beyond argument.

The following case illustrates social disaster brought about by sheer mental incompetence:—

A girl, aged 22, first came to notice when serving a sentence of three months' imprisonment for cruelty to her children, her husband having received a similar sentence. The prison officers had found that she was only capable of understanding the simplest orders and that she had to be treated like a child. She proved to be a blue-eyed, rather pleasant-looking girl, not obviously defective. She did not know a letter, but that had no significance as, like many canal children, she had never been to school. What was more unusual was that she had no idea of number, beyond possibly simple change from a shilling; she could not add 3 and 3. She did not know how long she had been married, or the ages of her children, or when or where her last baby was born! In mental tests she was barely at the 7-year level. Nominally a Catholic, she had had no religious teaching at all. The girl was frank and friendly, and anxious to tell her troubles. She had genuinely no idea why she had been put in prison. "I hadn't no money for milk and I fed it on sop and it cried a lot—and a policeman came and took me away." To all appearance she really loved her babies, and she questioned me eagerly as to when she could go back to them.

On inquiry it was found that her mother was a woman of at least average intelligence who still earned her living on the barges. Her father was dead. The mother had always thought the girl dull and had not wished her to marry, but the ceremony became necessary when she was 18. After marriage things got worse, and one day, when the baby was a few months old, the mother found her daughter asleep on the towpath in the pouring rain with the infant beside her. Since then she had taken entire charge of that child, but two younger ones had arrived, and the squalor and misery of the barge household became a scandal in that clean-living community. The husband, too, found life intolerable and knocked her about. At last the unspeakable condition of the children compelled the neighbours to intervene. They called in the National Society for the Prevention of Cruelty to Children, who found the child of 2 unable to sit up, and the baby a "skeleton"; both children are thought to be defective, but that is not yet certain.

There was no trouble in dealing with this case under Section 9, but, unfortunately, she proved to be again pregnant. After a brief stay in a convent home she was transferred to the care of the county authorities of her place of residence. The children were taken by the guardians. The husband, who at first said he had no further use for her, now vaguely says he thinks he would like her home, though he knows she could never keep a home for him.

The next case is at the other extreme of intelligence, and shows an example of the strange conduct-aberrations included in the "moral defective" group.

A girl, aged 16½, second of five sisters, was charged with uttering threats to her eldest sister. The first attempt to examine her failed, as she was having prolonged bouts of hysterical screaming. At the second interview she proved to be an attractive, pleasant-looking child who, without asking my name or business, confided her closest secrets at interminable length. The standardised tests, in which she coöperated well, showed her mental age to be nearly 12. Her memory was excellent, her response quick, her concentration good. Her main characteristic was a passionate father fixation, the most intense and overt example I have encountered. She had been his pet up to his death (he had been killed on active service) when she was 7 or 8, and she was encouraged by him to hit the other little girls with impunity. If her mother attempted to control her, the father would knock her down in front of the children. She remained throughout childhood violent-tempered, aggressive, passionately attached to her father's memory, and bitterly hostile to her mother and to the unfortunate elder sister. She admitted to me freely that she had never had anything but kindness from these two, who are amiable and affectionate characters, and the real nature of her feelings towards them remains obscure. At the age of 13 her mother's second marriage brought about a crisis of jealousy; she flung a knife at her and otherwise behaved so outrageously that the mother was obliged to charge her, and the child was put on probation for two years. Under the care of a sympathetic probation officer efforts were made to place her in four homes and four private families, but she had invariably to be removed as violent, quarrelsome, and insubordinate, though capable of good work and very attractive when she liked. Finally, she could not be placed further, and at 16 she was sent home, only to find that the still-hated elder sister had just become engaged. Her own tendencies were homosexual, and she resented this marriage intensely. She behaved so violently that the family were "afraid to go to bed" on one or two nights; she burnt a 10-year old sister's leg with a poker on some trivial provocation, she threw a knife at another sister, and a loaf of bread at her mother who was ill in bed, and she pursued the wretched elder sister with such abuse and threats that the police had to be called in. Even in the police station and in prison she repeated her threats with incredible cold-blooded malice. I pointed out to her that people who killed others were hanged for murder, and this evidently made some impression, for she told a visitor some days later: "I would like to bash my sister's head so that she died *slowly*, and then I wouldn't be a murderer!" She could give me no reason for these amiable sentiments except that the sister was the eldest child, and her mother had given her the father's war medals. She was, I found, truthful, except for a few bombastic lies based on the father complex.

The girl was not amenable to ordinary prison discipline, and, indeed, it was doubtful what purpose such punishment would have served. She was certified as a "moral defective," but it was thought that the condition was at base a psychosis of the dementia præcox type, and this diagnosis was confirmed by the superintendent of the institution to which she was sent. Her conduct improves, but she remains inaccessible to mental treatment, and the prognosis is not good.

The Care of Defective Delinquents.

The disposal of the women certified is, of course, at the discretion of the learned magistrate, who almost invariably, however, accepts the suggestions of the Council's representatives. Some magistrates are still not wholly alive to the preventive value of the Mental Deficiency Acts, and the importance of getting a case under supervision in her own home when institutiona care does not seem to be called for. Ordinary probation is not usually a success with defectives, and the cast an unfair burden on overworked probatio officers.

DISPOSAL OF CASES (58).

Not considered mentally deficient by the courts (sentenced to imprisonment, 2; bound over, 1)	3
Country cases discharged to other local authorities	4
Guardianship of parent	1
Probation	4

(One married, one reconvicted.)

Institutional Care under Mental Deficiency Acts.

Transferred to asylums	5	46
Sent to State Criminal Institution	5	
Now on licence	2	
,, on trial in hostel	2	
To guardianship	1	
Escaped	3	
Died	1	
Temporarily in poor-law infirmaries or hospital	3	
Still in M.D. institutions	24	

It is an old gibe against the Mental Deficiency Act that they make it possible for a man "to be sent prison for life for stealing turnips." If the man theft of the turnip was due to starvation, and investi gation showed that his mental incapacity disqualif him from earning his living, it might well be prolonged—even lifelong—institutional care was th kindest way of dealing with him. The magistr very wisely consider need for special care and rather than the actual offence for which the defect came before the court. In the great majority of in this series the girls either had no family or th relatives—very excusably—expressed themselves " the end of their tether" and unable to take th responsibility. It is the best parents who are anxious for institutional care if their children are serious trouble. *One rule of primary importance* not universally appreciated. *Defectives who h* shown any sign of giving trouble should never put under the sole care of a parent of the opposite To this rule there is no exception, and we have ma instances of the deplorable effects of ignoring it sentimental grounds.

The small number of women placed on prob might be disappointing if one did not recall that th for whom such treatment would be suitable mostly dealt with under preventive schemes defectives and never reach the courts. In view of youth of the prisoners at the time of arrest, it reasonably be hoped that several more will st and eventually be returned to community li Fortunately, the training offered by the colonies which the women are sent (especially the St institution for violent and dangerous defectives progressive and aims at developing latent capaci and virtues, even in the apparently hopeless.

Sterilisation.

As an immediate treatment for delinq sterilisation is *ipso facto* excluded, as obviously does nothing to improve the antisocial behavi which has brought the defective into conflict the law. In the neat American phrase: " offences against the community are not limited reproduction," and often do not include any tenden towards it. Contrary to the belief of some magistrat cutting the Fallopian tubes or vas deferens is not cure for hand-bag snatching. Among those who w ranked as delinquent defectives in my series were squalidly promiscuous, the homosexual, suffer from venereal disease, the suicidal, and the poten murderer. None of these persons could be sterili and turned loose, and it would be grossly unfair extravagant to subject a person to the risk of abdominal section if she is to be indefinitely segregat Sterilisation would not cure the mental incompeten which was at the root of the troubles of other ca is not, I think, appreciated that sterilisation is not w used in the United States as a punishment[3] for linquents of any kind.

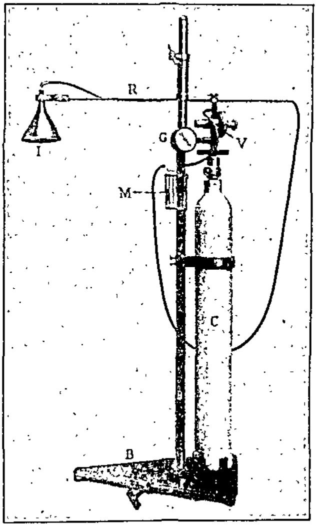
As a preventive measure sterilisation is even more practicable. It *obviously cannot be used for* whose defect is never ascertained, as was e case with many of these women, nor could it be ntemplated that local authorities would have the rontery to sterilise a child leaving school to whom ey had not offered a special education appropriate his needs. Only rarely does moral deficiency a fixed condition declare itself in childhood, and if e leavers from special schools were to be sterilised iolesale, thousands would have to be mutilated in der to catch the few dozen who become delinquent the few hundred who bear children. The effect of rning hordes of sterilised adolescents loose in the mmunity *requires further consideration before the periment is tried.* Most *important* of *all,* no parent uld be persuaded to allow a high-grade 7- or year-old child to enter a special school if sterilisation re to be her fate on leaving—or even if a shadow the possibility of such a fate hung over her. There no question that the special education of defectives, ch is the best preventive of crime, would be most ively interfered with.

In California the sterilised woman does not cease be an expense to the community, but is most refully supervised by trained social workers. She kept on a string (even if married!) and is hauled ck to the institution at the slightest sign of irregular nduct.[4] That is to say, the only benefit that sterilition could secure is: 1. To prevent the birth of such ildren as might be conceived before the woman's egular conduct attracted attention. 2. To enable a man to marry, without the husband being necesily aware she had been sterilised. Whether the ulcation of such a philosophy of marriage into the pulation is likely to raise ideals of family life is other matter. 3. To prevent the birth of more ldren, as in the case of the one married woman in this ies returned to her family. These are literally the y cases to which sterilisation can be applied in the e of the mentally defective, and the result is surely *idiculus mus* to emerge from such a mountain of paganda! A final question which occurs to me h the picture of high-grade patients fresh in mind his: if they improved sufficiently in conduct to der life in the community socially possible, how ld it be subsequently demonstrated to a judge and y that they were—or ever had been—mentally icient, and what would be the fate of the doctor o had sterilised them or secured their sterilisation his certificate?

This brief survey of a group of defectives in the unty of London is presented with all the diffidence uced by a knowledge that among a great popula-n many defectives may be missed. It may, however, ve a useful purpose in getting the subject into us and into a true relationship with the study of inquency among *normal persons. It may* also gest that a frontal attack upon the defective *qua* inquent is only a very small part of the intelligent dling of the problem of mental deficiency. Early ognition and preventive supervision and training the best methods of ensuring that subnormal sons shall be assimilated into the life of the comnity or, if that is impossible, put under conditions piest for themselves and others.

PORTABLE APPARATUS FOR OXYGEN.

Dr. Lachlan Grant writes: In the vicinity of sent-day hydro-electric power schemes it is essary always to be prepared for the immediate ninistration of oxygen to cases of severe shock. G. B. Brook, F.I.C., chief chemist to The British minium Coy., Kinlochleven, after lending out a keshift apparatus on several occasions, has designed the simple combination shown in the photograph. The oxygen cylinder is easily removed and replaced, although when in position it is held securely. Controls and gauges are in convenient positions and the glass *manometer is protected by a small but strong metal* cage. The rubber tubing to the vulcanite mouthpiece is threaded through a small metal tube, which is adjustable both vertically and horizontally. The centre of gravity is adjusted so that the apparatus will not topple over, and the base runs silently on three ball castors, so that it may be brought up alongside the patient or bedside with the greatest ease. When once assembled it can be kept so, and wheeled or lifted about quite handily—e.g., into a car, and can be very easily transported to any part of a country practice.



Portable apparatus for administration of oxygen. R = rod adjustable vertically or horizontally. I = vulcanite inhaler. V = regulating valve. G = pressure gauge. M = indicating manometer, protected by grid. C = cylinder (20 cubic feet). B = base on ball castors.

The entire apparatus can be made up for a few pounds, and the cost of maintenance is almost negligible. Mr. Brook will be pleased to answer any inquiries.

ANTIVIRUS AFTER MASTOID OPERATIONS.

ALTHOUGH recovery after the mastoid operation is nearly always straightforward the patient is, nevertheless, susceptible for the first seven or eight days to complications due to extension of the infective process to the lateral sinus or meninges. With a view to minimising this danger, Dr. H. Grain[1] has made use of Besredka's antivirus[2] applied frequently to the wound, and claims that this is a powerful aid to treatment. He employs a solution prepared from streptococci, staphylococci, *M. catarrhalis*, pneumococci, pneumobacilli, and *B. pyocyaneus*, and his technique *is as follows.* At the end of the operation a drainage-tube of small calibre is placed at the bottom of the cavity, passing from the level of the antrum to emerge from the lower angle of the wound, and is covered by a packing

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Gosney and Popenoe: Sterilisation for Human Better-nt. New York. 1929.

[4] Gosney and Popenoe. Op. cit.

[1] Presse Méd., Dec. 10th, 1930, p. 1681.

[2] See THE LANCET, 1927, ii., 73; 1929, i., 1092 and 1157.

of ribbon gauze soaked with the vaccine; above this is placed another tube twice the calibre of the first, perforated with several holes near the end, and long enough to emerge through the upper angle of the wound and to pass above the bandage; superficial to this is a second layer of ribbon gauze, also impregnated with the antivirus, outside which the usual dressings are applied. Ten to twenty cubic centimetres of the antivirus are introduced through the larger tube three times a day for the first two days, and afterwards twice a day. The outer dressings are changed every other day, but the packing is not disturbed until the sixth or seventh day; every half hour for two hours before this dressing 10 c.cm. of hydrogen peroxide is instilled through the long tube to facilitate removal of the packing. If the wound is healthy the irrigation tube is now removed, but the drainage-tube is replaced and the cavity packed with vaselined gauze; if the wound does not appear quite satisfactory, the treatment with antivirus is continued for a further 24 or 48 hours. Dr. Grain appears to have used this method for a large number of patients with satisfactory results, but says that in a few cases it has given no result. He thinks these failures are due to the causative organism being absent from the stock antivirus—e.g., *Streptococcus hæmolyticus* or *mucosus*, or "other atypical microbe"—and he finds local treatment with an autogenous preparation is successful in such cases. It might be objected that complications, such as sinus thrombosis and meningitis, are extremely rare after the mastoid operation in cases which have shown no suspicious symptoms beforehand and that it is precisely in those due to hæmolytic streptococci and to the *S. mucosus* that such sequelæ are commonest.

NEW PREPARATIONS.

PSYLLA (psyllium seed); LACTO-DEXTRIN (Battle Creek Food Company, Mich., U.S.A. Distributing Agents, Coates and Cooper, 41, Great Tower-street, London).—This company have sent us specimens of their laxative agent, Psylla, and their preparation, Lacto-Dextrin, for use in intestinal toxæmia. Psyllium seeds when immersed in water yield a mucilaginous substance which is able to take up relatively large quantities of water to form a gelatinous mass. They become in this way a useful lubricant, while the emollient character of the mass renders it of special service in fissure or hæmorrhoids. The same firm has received favourable reports from the clinical use of their combination of lactose and dextrin.

PEPTALAC; COW AND GATE RUSKS (Cow and Gate, Ltd., Guildford).—Peptalac is pancreatinised milk food predigested by a special process which assists assimilation. The predigestion of food by enzymes is no novelty, but the particular claim for Peptalac is that, with care and the use of a thermometer, a valuable beverage ready for use can be promptly obtained with the medium of hot water. The difficulty of the addition of raw cow's milk of varying composition to foods is thus avoided, as well as the more elaborate processes of preparation entailed by reheating and cooling. At the same time the firm send us a specimen of their Cow and Gate Rusks, which are deservedly well known.

RELAPSING FEVER IN TEXAS.

RELAPSING or African tick fever has not often been seen in the United States, though there was an epidemic in New York and Philadelphia in 1869, and five cases have been reported from Colorado within more recent times. A report of a cave infested with infected ticks now comes from Central Texas.[1] The cave was first explored by four youths who noticed on emerging therefrom that several small ticks were sticking to their legs. These they easily removed, but six days later the boys were all stricken with a fever which rapidly mounted to 103° or 104° F. Other symptoms were malaise, headache, leg-ache, and a persistent sense of chilliness with nausea and After these symptoms had continued for four days. macular rash appeared, and a few hours later th temperature began to decline to the accompanim of drenching sweats. The first relapse occurred i four to five days and showed the same symptoms, b was less severe and without any rash. The secon afebrile period lasted from four to seven days, and wa followed by a third period of fever during whi actively motile spirochætes were found in the bloo Intravenous doses of neoarsphenamine from 0·4 upwards were necessary to cure these patien Dr. Graham, investigating the cave in which patients had acquired the infection, became infect himself. The sand on the floor of the cave was fou to contain as many as 30 or 40 ticks per handf These were identified as *Ornithodorus turicata*. In tion of three rabbits with tick juice resulted in t speedy death of two, and in violent and fatal illn for the third after six days' interval. Typical spi chætes were from 18 to 25 microns in length, havi from 10 to 15 spirals.

STARK INDIA.[1]

As editor of the *Civil and Military Gazette of In* Mr. Trevor Pinch saw many things which do often come to the notice of a casual visitor, and us vivid glimpses of Indian life and customs. account of the flagellations in a Mohurrum proc and the disastrous Hindu pilgrimage of 1928, particular, are arresting. A considerable part of book has a medical interest, and generous tribut paid to the work of the Indian Medical Ser Perhaps undue stress has been laid on the sex ques prominent as that indubitably is in Indian In the section of the book concerned with sex s of the views advanced must be taken with especially the inference drawn from the story of beautiful Eurasian girl. That story was curren up-country clubs 30 years ago, and was not t very seriously.

Corrigendum.—On p. 30 of our last issue refer was made to a short survey of "Psychopathol published by Messrs. Baillière, Tindall and Cox. author's name is Dr. J. Ernest Nicole and no stated. We regret the error.

Births, Marriages, and Death

BIRTHS.

CLAXTON.—On Dec. 31st, 1930, at a nursing home, San the wife of Dr. E. E. Claxton, Folkestone, of a son.

MOSSE.—On Dec. 30th, 1930, at Tsinan, N. China, the w Francis H. (Robin) Mosse, M.A., M.R.C.P., of a da

MARRIAGES.

DEBENHAM—HUGHES.—On Jan. 5th, at St. Barnabas C Kensington, Robert Kersey Debenham, F.R.C.S. Kathleen Irene Hughes, daughter of the late W. W. H and Mrs. Hughes.

DEATHS.

ALLEN.—On Jan. 2nd, at Korna House, Woods View Bournemouth, Thomas Allen, Surgeon, of Robin H Bay, Yorkshire, in his 87th year.

HARRISON.—On Jan. 2nd, at his residence, Maysmor H Chester, Dr. George Harrison, in his 74th year.

JENKINS.—On Jan. 3rd, 1931, John Jenkins, M.R.C.S., L.R aged 61, medical superintendent of the Hamme Hospital for 25 years, beloved husband of Amy Je

STANDRING SMITH.—On Dec. 31st, 1930, after a short ill Robert Charles Standring Smith, M.B., Ch.B., B.A Palace-court, W.

N.B.—A fee of 7s. 6d. is charged for the insertion of N Births, Marriages, and Deaths.

ABERDEENSHIRE INFECTIOUS DISEASES HOSPIT The public health committee of the Aberdeenshire co council has recommended that, on grounds of efficienc medical and nursing care, the county's 12 infectious di hospitals should be reduced to four—Aboyne, Hu Strichen, and Peterhead. The saving is estimated £3000 a year.

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[1] Weller, B., and Graham, G. M.: Jour. Amer. Med. Assoc., Dec. 13th, 1930, p. 1834.

[1] Stark India. By Trevor Pinch. London: Hutchinson Co., Ltd. 1930. Pp. 288. 10s. 6d.

ADDRESSES AND ORIGINAL ARTICLES

NEPHROSIS.*

By T. Izod Bennett, M.D., F.R.C.P. Lond.,
PHYSICIAN TO OUT-PATIENTS, MIDDLESEX HOSPITAL, AND PHYSICIAN TO THE ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.

IMMEDIATELY after the war the attention of medical men in this country interested in nephritis was directed to publications by Albert Epstein of New York,[1] describing a group of cases of nephritis with œdema in which he had found the prognosis to be good, and in which he claimed that cure of the œdema could be brought about by the employment of diets abundant in protein together with the administration of thyroid extract. At much the same time there ippeared work by a number of German observers f whom Munk,[2] Volhard, and Fahr[3] were the incipal. This emphasised the importance of a group of cases usually included amongst those labelled is Bright's disease, but in which the histological esions were confined to the tubules, and were purely legenerative in character. To these cases the name nephrosis," originally suggested by Müller,[4] was iven.

As time has gone on Epstein and his followers in merica, and others elsewhere who have become nterested in these cases, have adopted the word nephrosis," with variations such as lipoid nephrosis, hronic nephrosis, or essential nephrosis, to include he cases indicated above. Much confusion has nsued because more common examples of Bright's isease characterised by œdema in conjunction with ised blood pressure and nitrogen retention have been ferred to as "nephritis of nephrotic type" or by milar terms, and at the same time many pathologists ave taken exception to any classification which nplies that degeneration is anything other than the rst stage of ordinary inflammation.

To-day, this confusion is tending to disappear, nd it is becoming recognised that a group of cases oes exist according closely with the original views the American and German workers. It is, however, ery important to define with exactitude the points hich permit of any case being included under this ead. Certain clinical, biochemical, and pathological atures must be present, and certain others must finitely be absent. These are included in the llowing table, in which the positive and the negative dings are clearly separated.

Characteristics of Nephrosis.

	Positive.	*Negative.*
nical ..	Albuminuria + + +. Œdema (lipoids in urine + –).	Normal blood pressure and heart. Normal retinæ. No hæmaturia. No epithelial casts.
ochemical ..	Increased blood cholesterol. Diminished plasma proteins. Reduced basal metabolic rate.	Blood-urea, chlorides, &c., normal.
thological ..	Degeneration of renal tubules (lipoid infiltration).	Normal glomerul and vessels.

Considering the general features indicated by this ble, it is clear that the most important points are: 1) that the case must exhibit œdema and albuminuria, and (2) that there must be no evidence whatsoever of involvement of the cardiovascular system.

About a year ago a closely reasoned paper was published by Christian,[5] who called attention to the extreme rarity of post-mortem records supporting the conception of "nephrosis." He was able to collect only about 20 cases from the world's medical literature, and the general trend of his review was to throw considerable doubt on the existence of the disease as a separate entity. Some of the American supporters of the conception have explained the rarity of post-mortem material by suggesting that the disease is so benign that complete recovery is usual, but with such a view I cannot personally agree, since in my experience complete recovery is very rare.

At the time when Christian's review was published, a case typical of nephrosis was under my care in the Middlesex Hospital, and within six months I was able to follow a further case almost from the start of the disease until its fatal termination. The full details of these cases are being published, and it is noteworthy that during the last 12 months details of about 15 other cases have appeared in print in the world's literature, the most recent being those of Van Slyke and others.[6]

A Typical Case.

The following is a brief description of a case recently under my care:—

A man, aged 35, came to me for advice concerning swelling of his legs accompanied by albuminuria. Pitting œdema was present in both legs to just below the knees. The urine became almost solid on boiling, but otherwise no abnormal feature of any sort could be discovered. The optic fundus, the heart, the blood pressure, were all quite normal. Blood analysis gave normal figures for urea and non-protein nitrogen, calcium, phosphorus, &c., but the cholesterol stood as high as 300 mg. per 100 c.cm. and the plasma-proteins were reduced, the reduction being greatest in the serum albumin.

Close inquiry into the past history revealed no serious illness of any sort. The Wassermann reaction was negative. Swelling of the ankles had been noticed periodically for a few weeks on several occasions during the previous twelve months and had been continuously present for two months before I first saw him.

After he came under my observation he remained at work and reported to me at hospital twice weekly for many months bringing with him on most occasions a suitcase containing all the urine passed for 48 hours. In this way we were able to estimate the amount of albumin he was losing, and this amounted on the average to 15–20 g. per diem. It has not always been sufficiently realised how enormous is the total of albumin lost by these patients. The white of one egg contains approximately 6 g. and it is clear that a patient such as the one at present described may lose the equivalent to 5, 7, or even 12 whites of egg daily. Such a loss must before long exercise a profound effect on the circulating blood.

The patient was encouraged to take full amounts of protein in his food, particularly the vegetable proteins such as have been advocated by Epstein. His diet was kept as free of salt as possible, and he was given increasing doses of thyroid extract until he was taking grs. 60 daily; an increasing pulse-rate prevented the dose being pushed higher than this. In spite of this treatment œdema steadily increased, and before long the scrotum and penis and abdominal wall were involved, ascites was present, and there were physical signs of double hydrothorax. The patient was still at work but had put on 3 st. in weight, and was in such a condition that when he had been seated at his desk for a few hours he was obliged to massage his legs before he could straighten his knees.

He was then admitted to hospital. His condition was the same, there still being no change in the blood pressure and the blood chemistry remaining normal except for hypercholesterolæmia, and marked lowering of the plasma-proteins. He was given a series of intravenous injections of salyrgan, but even full doses of this drug did not increase the output of urine, which remained in the region of 600 to 800 c.cm. daily. After being in hospital about 14 days, he developed pain in the abdomen, the temperature rose, he became delirious, the abdominal wall showed discoloration, and in 48 hours he was dead from a pneumococcal infection of his œdematous tissues.

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* A lecture delivered before the Fellowship of Medicine in vember, 1930.

The post-mortem examination revealed a heart of normal size, and kidneys somewhat enlarged by œdema, which on microscopic section showed lesions of a degenerative nature and confined to the tubules. The glomeruli appeared perfect.

Such is a classical example of "nephrosis." It may be asked why I have not used the term "lipoid nephrosis," nor alluded with more emphasis to this aspect of such cases. Cholesterol is almost always present in excess in the blood of these patients, but it is also present in the blood of many cases of nephritis exhibiting both œdema and cardiovascular change. It is not a feature of nephrosis alone, as far as we know; the observations of Maxwell[7] and of Gainsborough[8] seem to bring this out clearly. The "myelin" kidney, described by Kaiserling and Orgler,[9] McNee,[10] and others, is a greasy kidney loaded with lipoids, but is not necessarily from a case of nephrosis; it may be recovered from other types of nephritis, always with œdema, but sometimes with cardiovascular and marked glomerular change. Too much emphasis should not therefore be laid on this aspect, although it is an important feature of the biochemistry.

Ætiology and Prognosis.

The case which has been described is typical of many which have been recorded in the literature; but it should be noted that in many others some important ætiological factor can be traced. Thus, the cases originally described by Müller and Munk were nearly all of syphilitic origin, and it is common knowledge that in the days when syphilis was prevalent, many cases of intense albuminuria and œdema were observed which recovered complete health under treatment of the specific infection. Other cases of nephrosis appear to be of tuberculous origin, and amyloid disease appears to be essentially similar in many of its features. When this has been said, there remains at present nothing further to tell concerning the ætiology of this condition, and in many, perhaps the majority, of all the cases no ætiological factor of any kind is at present discoverable. Perhaps the most important negative fact to remember being that a history of severe scarlet fever or of recurrent tonsillitis always makes it probable that a case belongs to the category of glomerulo-tubal nephritis rather than nephrosis.

As regards prognosis, it would seem that the optimism of the German and American observers, which is evident in the first descriptions of nephrosis, is not justified by the experience of their successors. A proportion of cases in childhood appear to make complete recovery, but unless an ætiological factor, such as syphilis, is discovered and removed, one must remain doubtful as to permanent cure for a very long time indeed.

Importance of Nephrosis.

It may be asked why, if these cases are rare, they are so important. In the first place they are probably much commoner than is usually supposed; many pathologists say that they have never seen an example, the paper by Christian, to which reference has already been made, suggests an almost extreme rarity, and yet in the last 12 months the number of recorded cases has increased by over 50 per cent. Further, we must acknowledge that in the experience of many people, cases conforming clinically to this description are known to recover in a certain proportion and so escape observation by pathologists. We cannot therefore dismiss the group merely on the grounds of rarity.

But apart from this they have great importance a indicating a definite subdivision in the classification of Bright's disease. That great medical [illegible] in his "Reports of Medical Cases," focused the attention of the world on the association between dropsy, disease of the kidneys, and albuminous urine. He called attention to cases with great renal degeneration and to others with granulation of the kidneys, but although he distinguished three main types, he clearly stated that he was unable to decide whether these represented different diseases or stages of the same malady. In the epoch following Bright, an endeavour was made to distinguish two main types termed respectively "parenchymatous" and "interstitial" nephritis. These words remain too frequently in the nomenclature, for it is common knowledge that it is exceedingly difficult histologically to demonstrate a case with pure parenchymatous inflammation and no interstitial lesions, whilst in cases of so-called interstitial nephritis there is always considerable change in the epithelium of the organ.

A great advance was made during the nineteenth century when Gull and Sutton[11] separated off group which they called "arterio-capillary fibrosis"; this is the group which is becoming known to-day as ischæmic nephritis, and is recognised as a late result of primary hypertension, the sclerosis of the kidney being secondary to vascular changes. It generally agreed that in such cases death is far more often the result of cerebral hæmorrhage or cardiac failure than of renal failure.

But even with the recognition of the ischæmic or arterio-sclerotic group as a separate entity, there remained a heterogeneous group of cases classed Bright's disease, in which clear separation in parenchymatous and interstitial subdivisions was n possible, either clinically or pathologically.

The next attempt at classification arose from brilliant investigations of Widal and his school France, who revived interest in the blood chemistry and drew attention to the importance of nitrogenous constituents of the blood as affording index of approaching uræmia. Widal[12] endeavoured to set up a "functional" classification of nephritis dividing cases into those in which nitrogen-retention was conspicuous, and those in which he believed retention of chlorides to be the outstanding feature with œdema as a consequence. This classification has not stood the test of critical inquiry. It perfectly true to-day to say that, in cases of re disease with œdema, chloride taken by mouth te to make the œdema increase, but we know that t is not due to any impermeability of the kidney salt, but is rather the effect of a "pre-renal deviation of water and crystalloids from the blood plasma i the tissue spaces. A similar phenomenon occurs cardiac œdema, and therefore we are unable to support to the hypothesis that there is a variety of renal damage in which the excretion of chlorides is prevented in a manner analogous to the failure urea excretion in cases of renal sclerosis.

Subdivisions of Bright's Disease.

The classification of nephritis which appears tena to-day is that which recognises an *acute glo inflammation* as the initial lesion in the vast majo of cases. We recognise acute nephritis as a di which essentially damages the glomeruli and ch nephritis leading to secondary contraction of kidney is a late consequence of such initial in This group, which may be subdivided according as initial damage to the kidney is diffuse in type focal in character, affecting certain groups of glomeruli only, includes the forms of nephritis occurring with infectious fevers, tonsillitis, and so on.

Next we recognise the primary arterial group, first described by Gull and Sutton, usually spoken of to-day as *ischæmic nephritis;* a group in which primary hypertension is the first manifestation of disease and in which cerebral hæmorrhage or cardiac failure are far more often the cause of death than is uræmia. In such cases a sclerotic kidney is always found at autopsy, but although this shows extensive destruction of the organs on microscopic examination, t is unusual for such destruction to have progressed sufficiently to cause death before either the rupture of a cerebral blood-vessel or failure of the heart muscle has interrupted the life of the patient.

And now we have *nephrosis* as a third member in the group constituting Bright's disease. I have already indicated its characteristics, and it is essentially he fact that the primary lesion is a degeneration of he tubules which enables us to put it forward as a parate entity.

The Production of Œdema.

But there is a further reason which makes the ecognition of nephrosis important—namely, the ght which this conception throws on the mechanism f œdema.

Admitting that glomerular nephritis is often sponsible for œdema, it is nevertheless a fact that ses of nephrosis exhibit the so-called "renal" dema in its most uncomplicated form. In nephrosis e known lesions are relatively simple, being ractically confined to the renal tubules. The ymptoms are few, being merely albuminuria and dema, and the blood chemistry exhibits no changes ve an excess of cholesterol and reduction of the asma-proteins. Accepting these facts, it becomes obable that the œdema of these cases is the direct sult of the loss of protein from the blood plasma hich follows the intense and prolonged albuminuria.

Generalised œdema, such as we see in the medical ards of our hospitals, is the result of passage of ter and salts through the capillary walls into the sue spaces. In such cases increased permeability the capillary wall may sometimes be present, but en if this factor is important, it is necessary for rtain forces to be in action in order to bring about e passage of fluid into the tissue spaces. These ces are many and complicated, but two of them are outstanding importance—namely, the capillary ood pressure and the colloid osmotic pressure of the sma-proteins. Of these forces the capillary blood essure depends to some extent on the general blood essure, but only to a limited degree because the pillary blood pressure is constantly controlled by a vasomotor system. Capillary blood pressure is, the other hand, liable to considerable variations rough changes in pressure on the venous side. hen cardiac failure or any other cause prevents the dy emptying of the veins, capillary pressure will considerably increased, and in such circumstances see œdema of the "cardiac" or "obstructive" pe.

Turning to the second great force, the colloid motic pressure, it has been recognised since the neer work of Starling[13] that the molecules of otein in the plasma exercise a continuous osmotic ce, tending to retain water and salts in the circulat- blood. Fibrinogen has little power in this respect, bulin has more power, but it is essentially the umin which exercises the greatest osmotic force. has been calculated by Govaerts[14] and others, who have specially studied this side of biochemistry, that the albumin molecule exercises a colloid osmotic pressure six times as great as that of globulin. It is essentially this colloid osmotic pressure which is responsible for holding back water during the passage of the blood through the capillaries and for reabsorbing water from the tissue spaces when transudation has occurred. From this it follows that if for any reason the plasma-proteins are greatly decreased, the reabsorption of water will be impeded and the production of œdema notably facilitated, and this is what happens in the so-called renal œdema. The loss of albumin through the kidney into the urine is so great that we find the plasma-proteins diminished from their normal figure of about 8 g. per 100 c.cm. to 6, 5, or even 4 g. or less, and the diminution being chiefly at the expense of the albumin, there is a correspondingly enormous fall in the colloid osmotic pressure. This is the probable explanation of "renal" œdema and such observation of the concentration of plasma-proteins is an extremely important one in biochemistry and in clinical medicine which has been all too often neglected.

Recently, in conjunction with Dodds and Robertson,[15] I have been able to investigate a number of cases of œdema of obscure origin, and we have been interested to find that in many of them there is a notable lowering of the plasma-proteins. The cases we have so far investigated have chiefly belonged to two groups. In the first group there has been cirrhosis of the liver with the collection of large quantities of albuminous fluid in the peritoneum, but in addition there has been œdema of the arms and legs, and we believe that it is the loss of albumin from the blood into the peritoneum which has depleted the plasma-proteins to such an extent that a generalised œdema has followed. The second group has consisted of cases with extensive simple or malignant ulceration of the stomach, and in these again a generalised œdema with demonstrable lowering of the plasma-proteins has been due, according to our conception, to an initial loss of albumin from the blood, so lowering the colloid osmotic pressure that œdema has resulted.

These observations have but an indirect application to the subject of nephrosis, but the application is important because it has been suggested in some quarters that nephrosis is not a renal disease at all, but is a disorder of metabolism in which the albumin molecule of the blood plasma is so changed that it can escape through a normal kidney. It has further been suggested that such degenerative changes as are observed in the kidney are merely the result of a depleted blood plasma. Our observations on cases in which the blood plasma was lowered by loss of albumin into the peritoneum or alimentary canal show that in such cases no renal lesion became demonstrable, and it therefore seems that in nephrosis it is more logical to accept the microscopic changes in the kidney as evidence of damage which allows the escape of serum-albumin as a consequence.

These observations on the plasma-proteins have yet a further application because they indicate the unsatisfactory nature of the majority of forms of treatment at present adopted. It is clear that to promote diuresis is not by itself an action tending to cure because the mere extraction of water from the tissues will leave the blood plasma as poor in proteins as before, and the only form of treatment which can be expected to cure is one which will prevent further leakage through the kidney, and restore the blood proteins to their normal condition. Diet is, therefore, very important, and even if our present knowledge is insufficient to enable us to promote the creation of serum-albumin with any certainty, it is at least logical to keep these patients on a diet containing abundant protein which will supply them with the elements necessary to combat the constant loss of albumin which is the essential mechanism of their œdema.

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HISTOLOGY OF BUCCAL CARCINOMA

IN RELATION TO PROGNOSIS AND RADIO-SENSITIVITY.*

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THE treatment of malignant disease by radium has given a fresh impetus to the histological study of cancer, for many pathologists consider that the explanation of radio-sensitivity and radio-resistance is to be found in the histology of the cancer cell. Ewing[1] states that "the cure of carcinoma by radiation results from a nice adjustment between injury to tumour cells, ensuring their partial or complete necrosis, and injury to surrounding tissues, eliciting a reactive reparative inflammation which removes tumour debris and often destroys viable tumour cells." It can hardly be possible to obtain such a "nice adjustment" between radiation, cancer cell, and stroma reaction in the absence of a knowledge of the histology of each particular cancer under treatment. The present paper, therefore, is an attempt to find a histological explanation of the fact that local healing of carcinoma of the tongue is obtained in less than half the cases treated by irradiation. In order to have a firm background for such work it was first necessary to prove a relationship between the histology of buccal cancer and its clinical course.

If it be possible to classify with some constancy the degree of histological differentiation in a carcinoma, then it might perhaps be expected that such a classification would be correlated with events such as (1) the rate of growth of the tumour, (2) the duration of life from the detection of the growth, (3) the tendency to dissemination, (4) the time of appearance of metastases, (5) the results of operative treatment, and (6) the reaction to radiotherapy.

The life-history of a cell, like that of the whole organism, consists of reproduction (mitotic division), differentiation (changes in structure), and specialisation (development of function). It is a well-recognised biological law that there is an inverse relationsh between the processes of differentiation and speciali tion on the one hand, and the powers of reproductio on the other. Thus a carcinoma, increasing b geometrical progression without differentiation, wi grow faster and be more malignant than one in whic the cells undergo some degree of differentiation, wi corresponding diminution in reproductive activit The process of differentiation is a self-imposed bra (Broders[2]), and malignancy is dependent upon th relationship between the rate of growth and the degr of differentiation (MacCarty[3]).

Hansemann,[4] in 1893, first pointed out the relatio of the histology of a cancer to its biology, and intr duced the term "anaplasia" to describe the ve cellular, embryonic type of growth; he thought al that the histology of a cancer was of more importan in its prognosis than any other single factor. The ideas of differentiation and anaplasia have be steadily developed by many pathologists, and we finally expressed in statistical terms by MacCarty a by Broders.[5] Broders's histological classification an epithelioma depends upon the degree of differen tion it shows towards a normal squamous epitheliu The normal differentiation of a stratified squamo epithelium is from the cuboidal basal cells, throu the polyhedral prickle cells and flat squamous ce to keratinised cells; these last die to form the surf of amorphous keratin. So Broders describes Grade 1 epithelioma as being from 75 per cent. 100 per cent. differentiated, and 0 per cent. to 25 cent. "dedifferentiated"; Grade 2 is 50 to 75 p cent. differentiated, and 25 to 50 per cent. dediffer tiated; Grade 3 is 25 to 50 per cent. differentiat and 50 to 75 per cent. dedifferentiated; and Grad is 0 to 25 per cent. differentiated, and 75 to 100 cent. dedifferentiated.

The embryonic type of epithelioma Broders c completely "dedifferentiated," but, as Ewing[6] sa the idea of dedifferentiation is an unwarran assumption and contrary to sound biological princi *For in biological phenomena irreversibility* is outstanding feature; that an organism or a should retrace its steps and travel backwards alo the path of its life-history is difficult to believe. Th anaplasia is a term more applicable to the phys logical state and histological appearance of malign cells.

Another criticism of Broders's classification that a malignant growth is not uniform in struct throughout, and that therefore no single histolog section is of value as an index of malignancy. therefore specially investigated this point, and fo that such a contention was completely untrue, any rate for buccal carcinomata. Several grow were serial sectioned throughout, and in many sections from different parts of the growth taken; in every case uniformity of the growth found. Further, the lymph gland metastases were nearly every case *uniform in structure* with primary growth. It is, indeed, remarkable that structure of a carcinoma is so rigid that its metast reproduce not only its coarser but even its fi histological characteristics.

The Present Investigation.

The *material investigated* consists of all the cas carcinoma of the lip, tongue, floor of mouth, and palate treated in St. Bartholomew's H from the years 1921 to 1927, so that three ye least have elapsed for the estimation of results; addition, those cases treated by irradiation in years 1928 and 1929 have been studied from the point of view of healing of the primary lesion. The material comprises, therefore, a totally unselected group of cases, treated by many different surgeons; so that the correlation between the histogenesis of he carcinoma and the fate of the patient is obtained ndependently of any personal factor in treatment.

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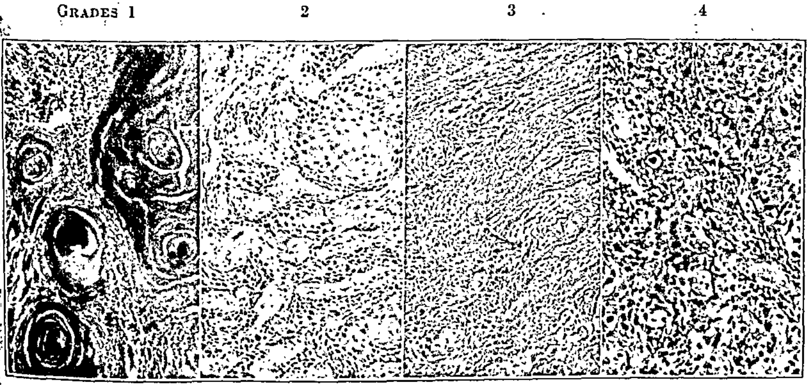
* Part of a Thesis approved for the Degree of Master of Surgery in the University of London.

Method of investigation.—All the available histological sections of carcinoma of the bucco-pharyngeal nucous membrane were collected and graded according o Broders's classification. The same was then done ndependently for the lymph glands where these had een removed and sectioned. Lastly, the clinical iotes of the patients were abstracted, and cases where io pathological section had been taken were included or completeness. By the courtesy of Mr. Lionel Colledge I was able to study some of Broders's own lides before starting the investigation; I may add hat I went over my first 100 slides independently a econd time six months later, and as this second ading in 97 slides was identical with the first, oders's method of classification is clearly both plicable and accurate.

Criteria of grading.—An epithelioma may consist masses of cells of embryonic type without any rangement or differentiation, with great variation the size and shape of both cells and nuclei, with any mitotic figures and large deeply staining cleoli, and abundant chromatin (Grade 4). Or its lls may resemble those of the basal layer of the rmal epithelium and show some degree of alignent, but little or no differentiation towards prickle-ll formation; there is some variation in size and ape of cells and nuclei, and a fair degree of mitotic tivity (Grade 3). Next the epithelioma may consist collections of cells arranged with a basal cell layer the periphery of each collection, differentiating to prickle cells and larger flattened squamous cells wards the centre, but without actual keratinisation the squamous cells; the cells and nuclei are more iform in size and shape, mitoses and large nucleoli e infrequent, and hyperchromatism is absent rade 2). Lastly, the growth may be almost wholly mposed of well-formed cell-nests; the stimulus differentiation has been much greater than that to production, and most of the cancer cells have killed themselves in forming epithelial pearls (Grade 1). Table I. summarises these criteria of grading, and the microphotographs further illustrate a typical example of each grade. It may be remarked that the stroma is not considered in this histological classification. The meaning of the stroma reaction is obscure, and conflicting views are held; therefore it was decided to confine the investigation (at any rate in the first place) to the malignant cell alone.

TABLE I.—*Criteria of Grading.*

Grade.	Cell-nests.	Keratinised cells.	Squamous cells.	Prickle cells.	Variation in size and shape of cells and nuclei.	Mitoses.	Large nucleoli.	Hyper-chromatism.
1	+ + +	+ + +	+ + +	+ + +	0	0	0	0
2	+	+	+ +	+ + +	+	+	+	0
3	0	0	0	+	+ +	+ +	+ +	+
4	0	0	0	0	+ + +	+ + +	+ + +	+ + +



Sections of epitheliomata to illustrate the four grades distinguished by Broders. × 90.

Results.

The total number of patients investigated is 319; 71 treated by radiotherapy have all been followed up for one year or more to discover the effect on the primary growth. Of the remaining 248, 208 have been followed up for three years or more. The 40 untraced cases and 8 post-operative deaths (out of 286 patients operated upon =2·8 per cent.) have been excluded from the follow-up results.

HISTOLOGICAL GRADE AND PRIMARY SITE.

For the purposes of this investigation certain primary sites were defined: (1) the dorsum and sides of the tongue, anterior to the circumvallate papillæ; (2) the floor of the mouth, with the under surface of the tongue and the lower alveolus; (3) the base of the tongue—i.e., posterior to the circumvallate papillæ; (4) the tonsils, pillars of fauces, palate, and upper alveolus, but excluding the maxillary antrum; (5) the lower lip; and (6) the upper lip and mucous membrane of cheek.

From Table II. it is seen that the histological grading agrees with the usual clinical prognosis. For example, 86·7 per cent. of carcinomas of the lower lip fall into Grades 1 and 2, and growths of the lower lip are recognised clinically as being relatively favourable. On the other hand, growths of the tonsillar region are clinically of very bad prognosis, and it is seen that 60·4 per cent. of these growths fall into Grades 3 and 4.

TABLE II.—*Relation of Primary Site to Histological Grade.*

Grade	1	2	3	4
Site.	Number of cases and per cent.			
Dorsum and sides of tongue, anterior to circumvallate papillæ	19 (22·4)	35 (41·2)	24 (28·2)	7 (8·2)
Under surface of tongue, floor of mouth and lower aveolus	4 (10·0)	21 (52·5)	12 (30·0)	3 (7·5)
Base of tongue	0 —	7 (53·8)	2 (15·4)	4 (30·8)
Tonsils, pillars of fauces, palate, and upper alveolus	1 (1·7)	22 (37·9)	27 (46·6)	8 (13·8)
Lower lip	11 (36·7)	15 (50·0)	3 (10·0)	1 (3·3)
Upper lip and inside of cheek ..	1 (6·2)	9 (56·3)	5 (31·3)	1 (6·2)

DELAY BETWEEN FIRST SYMPTOM AND TREATMENT.

It is a fair assumption that the rate of growth of a cancer is the main factor determining how soon the patient seeks treatment. In Grade 1 buccal carcinomas the interval between the patient's first symptom and his seeking advice was 7·5 months; in Grade 2, 6·0 months; in Grade 3, 5·6 months; and in Grade 4, 3·2 months. There is, therefore, a direct correlation between the histological grade of a buccal carcinoma and its rate of growth.

PROGNOSIS.

Cure.—Taking all sites together, there were 50 three-year cures out of 215 cases followed (23·3 per cent.). The percentage three-year cures in each grade are as follows: Grade 1, 34·8; Grade 2, 29·3; Grade 3, 16·3; Grade 4, 5·9. There were 21 five-year cures out of 125 cases followed (17·0 per cent.). For each grade the percentage five-year cures are: Grade 1, 33·3; Grade 2, 23·7; Grade 3, 10·3; Grade 4, 0·0. Each site taken separately shows similar results to the summarised figures given above, and it is seen that a patient with a Grade 1 buccal carcinoma has a one in three chance of being cured for three or five years, while a patient with a Grade 4 growth has only a one in seventeen chance of a three-year cure, and none at all of a five-year cure. There is, therefore, a direct correlation between the histological grade of a buccal carcinoma and the prospects of its cure.

Post-operative survival.—The average post-operative life of 169 patients who were followed from operation until death (including some who died without certain evidence of recurrence of the carcinoma) was 17·2 months. In each grade the post-operative life in months was as follows: Grade 1, 25·7; Grade 2, 18·5; Grade 3, 13·8; Grade 4, 10·7. The total duration of the disease (from the first symptom to death) shows a similar relationship to the histological classification. The duration in months was as follows: Grade 1, 32·7; Grade 2, 24·1; Grade 3, 18·5; Grade 4, 14·1; average of all cases, 21·8 months. It has therefore been shown that there is a direct correlation between this histological classification of buccal epitheliomata and (1) their rate of growth, (2) their prognosis as to cure, as to post-operative length of life, and as to the total duration of the disease. Table III. summarises these figures, which are in agreement with those of Broders[5] an other workers.[7]

TABLE III.—*Relationship between Histological Classification and Clinical Course of Carcinomata of Buccal Cavity.*

Grade.	Cases.	Per cent. graded cases.	Average age.	Delay before treatment.	Fatal cases.		"Cures."	
					Post-operative life.	Total duration of disease.	Per cent. 3-year.	Per cent. 5-yea
			yrs.	mths.	mths.	mths.		
1 ..	36	14·9	61·7	7·5	25·7	32·7	34·8	33·
2 ..	109	45·0	60·0	6·0	18·5	24·1	29·3	23·
3 ..	73	30·2	59·5	5·6	13·8	18·5	16·3	10·
4 ..	24	9·9	59·3	3·2	10·7	14·1	5·9	0
Not graded	77	—	60·1	5·4	16·6	20·0	21·6	12·
Total and average	319	—	60·0	5·7	17·2	21·8	23·3	17·

LYMPHATIC DISSEMINATION.

The uncertainty of clinical examination of t cervical lymphatic glands has prevented the findi of any correlation between the histological classific tion and the tendency to lymphatic disseminatio For of 59 cases with lymphatic metastases clinicall 22 (37·3 per cent.) were proved innocent microsco ically; and of 31 cases with no clinical metastas 16 (51·6 per cent.) contained carcinoma deposi microscopically. Lane-Claypon similarly fou glandular metastases in over half the cases of car noma mammæ in which the axillary glands we clinically not involved.

Of 48 cases available for study, the glandul metastasis was of the same histological grade as t primary growth in 39; in 5 it was of a higher gra and in 4 of a lower grade. These results agree wi those of Patey and Scarff,[8] who found the grade the axillary gland metastases to be the same as th of the primary mammary carcinoma in 86 per ce of cases.

RECURRENCES.

The average interval between operation a recurrence in 108 cases was 8·5 months, and in ea grade the interval was as follows: Grade 1, 9 Grade 2, 9·4; Grade 3, 9·2; Grade 4, 3·8 mont Since the nature and extent of the first opera have not been taken into account in these figures is perhaps not surprising that no well-marked corre tion between the histological classification and t time of recurrence has been found; but, at any r it is seen that Grade 4 growths tend to recur m rapidly.

REACTION TO IRRADIATION.

There is general agreement that the more a tis approaches an embryonic type, the greater is t radio-sensitivity (Dominici[9]), and that the maxi radio-sensitivity of the cell corresponds to the p of mitotic activity (Perthes[10]). It is therefore to expected that a histological classification of ca nomata, according to the degree of anaplasia mitotic activity, would be correlated with radio-sensitivity. Such a correlation has, in been obtained by some investigators, notably by Cutler[11] in carcinoma of the cervix uteri, and to a less extent by de Nabias and Forestier[12] in their karyokinetic index.

Table IV. compares the grade of the primary growth with its reaction to irradiation, and it is seen that there is no correlation whatever in the 71 cases investigated.

TABLE IV.—*Effect of Irradiation upon Primary Carcinoma According to its Histological Grade.*

Grade	1	2	3	4	Total and per cent.
Response of primary lesion to radiation	Number of cases and per cent.				
Healed	4 (50·0)	12 (40·0)	8 (40·0)	8 (61·5)	32 (45·1)
Improved	3 (37·5)	10 (33·3)	5 (25·0)	3 (23·1)	21 (29·6)
No effect	1 (12·5)	8 (26·7)	7 (35·0)	2 (15·4)	18 (25·3)
Totals	8	30	20	13	71
Average time of complete healing (in weeks) ..	11	10	19	8	12

If radio-sensitivity is not dependent upon the degree of anaplasia of the malignant cell, perhaps it is correlated with the nature of the stroma, as Stanford Cade[13] maintains. Table V. compares the reaction o irradiation of the primary growth with the degree f round-cell infiltration of the stroma, and again no elationship is found. It is not, of course, suggested hat round-cell infiltration comprises the whole troma reaction, but it is probably a good criterion, nd it admits of fairly accurate estimation in the issues. The histogenesis of an epithelioma, then, is orrelated with all its biological expressions except ts reaction to irradiation, but the following hypothesis vould include this also.

TABLE V.—*Response of Primary Lesion to Irradiation According to Degree of Round-celled Infiltration.*

Degree of round-celled infiltration.	Response of primary lesion to irradiation.			Total treated.	Total healed and imp. No. and per cent.
	Healed.	Improved.	No. effect.		
Dense	7	3	4	14	10 (71)
Moderate	8	11	5	24	19 (79)
Slight	11	3	5	19	14 (74)
None	6	4	4	14	10 (71)
Total	32	21	18	71	53 (75)

Action of Radium on Epithelioma.

In vivo, there is general agreement that the action f radium on the cancer cell may be direct—i.e., a ethal effect on the cancer cell—or indirect. The atter, according to Dominici[14] and Clunet,[15] comprises in the epitheliomata (1) a latent phase of 5 o 16 days; (2) a phase of monstrous evolution—welling of cell and nucleus, atypical mitosis, &c.; 3) a phase of diffuse keratinisation; (4) a phase of hagocytosis by polymorphonuclear and mononuclear ells; (5) a phase of fibrosis.

Alter[16] studied the histological changes in epithelioma of the cervix uteri after irradiation, and observed hat some growths responded so rapidly that the dissolution of the tumour cells occurred before any cellular changes could be observed—in other words, a direct action of the irradiation. Other growths responded more slowly, and here the basal cells were destroyed, but the prickle cells keratinised in a normal manner, except that this keratinisation was accelerated by repeated small doses of irradiation.

The few cases in which I have been able to observe the changes in an epithelioma consequent upon irradiation have shown in a striking manner the rapid differentiation of the malignant cells into keratinised cells; these latter die and are absorbed by polymorphonuclear phagocytosis. Two cases in which lymphatic glands containing metastases were excised after irradiation showed that the metastases were of a lower histological grade than the primary growth—i.e., had undergone greater differentiation. Alter also observed these changes in lymphatic gland metastases after irradiation.

Thus the action of irradiation upon an epithelioma may be summarised as (1) the actively dividing cells (basal or embryonic type of cell) are destroyed by direct action, and (2) the differentiating, more adult type of cell is speeded up in its differentiation, becomes keratinised and so dies—that is, is destroyed by indirect action.

With regard to the effects of irradiation upon the stroma of a malignant growth, there is an equal division of opinion as to whether changes in the stroma are primary or secondary effects; in general, such changes can be interpreted as similar to the ordinary connective tissue changes by which any lesion in the body is healed.

If, then, irradiation kills some malignant cells and stimulates others to complete adult differentiation, the highly differentiated epithelioma and the very anaplastic one would react equally well to radiotherapy. The cells of the former, or Grade 1 carcinoma, would undergo complete differentiation beyond the point of reproduction. The cells of the latter, or Grade 4 carcinoma, would be killed directly. Thus the interaction of these two factors would explain why irradiation heals the same percentage of growths in each histological grade.

PRACTICAL APPLICATION.

The practical application of this hypothesis would require the coöperation of the pathologist and the radiotherapeutist. It has been suggested that the maximum direct lethal action of irradiation on the cell is obtained by a high intensity acting for a short time, while the indirect action is best obtained by a low intensity acting for a long time.

Now the varying proportions of actively dividing cells, prickle cells, and keratinising cells in an epithelioma can be assessed by Broders's classification, and the problem will consist of the determination of the best method of irradiation according to the histology of the cancer under treatment. If the healing of a Grade 1 carcinoma, consisting mainly of prickle and keratinising cells, requires the differentiation of these into fully keratinised elements, this result will be best obtained by a small dose of irradiation acting for a long time. As an example could be instanced the surface application of radium, the results of which have already been demonstrated in the effective treatment of cancer of the lip; epithelioma of this site is mainly a Grade 1 or 2 growth, and hence its ready healing by prolonged surface application as applied by Regaud and Quick. For Grades 2 and 3 growths, a moderate intensity for a moderate time would be suggested; or perhaps better still would be combined X irradiation (to destroy the dividing cells) and radium (to stimulate differentiation of the prickle cells into non-cancerous keratinised elements). The anaplastic Grade 4 growths would respond to a high intensity for a short time, as by deep X ray therapy; X rays are also indicated for this type of epithelioma, because it has usually extended much more widely than clinical examination would suggest, so making difficult its efficient irradiation by radium implantation.

Summary.

1. The investigation comprises the study of 319 cases of buccal carcinoma from the viewpoints of histology and clinical course, and of 71 cases as regards irradiation response.
2. The accuracy and usefulness of Broders's histological classification of epitheliomata have been demonstrated.
3. A well-marked correlation between the histology and the clinical course of buccal carcinoma has been obtained. This correlation is found especially in (*a*) the post-operative length of life, (*b*) the total duration of the disease, and (*c*) the prospects of cure. These are increased the greater the differentiation of the carcinoma, and decreased the greater its anaplasia.
4. No direct relationship was found between the histology of buccal carcinoma and its response to irradiation.
5. A hypothesis is suggested to explain this apparent exception to the general correlation between the histogenesis and the biology of buccal carcinoma.
6. The possible use of this hypothesis in the radiotherapy of buccal cancer is suggested as enabling the most suitable method of irradiation to be applied according to the histology of the growth.

My thanks are due to the electors of the Luther Holden scholarship, during my tenure of which this work was done; to Mr. G. E. Gask and Dr. E. H. Kettle, professors of surgery and pathology at St. Bartholomew's Hospital, for their constant direction and assistance; and above all to Dr. H. H. Woollard, *professor of anatomy at St. Bartholomew's*, for many fertile discussions and continuous helpful criticism.

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TRIGEMINAL NEURALGIA.

THE ANATOMY OF THE "HARTEL" TECHNIQUE.*

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TRIGEMINAL neuralgia is a progressive intractabl disease. Its chief manifestation is a sudde excruciating pain limited to the area of distributio of the trigeminal nerve. Although the patholog and ætiology of this complaint are still unknown relief can be obtained by interruption of the nerv impulse in its course to the brain. This may be don by an intracranial operation or by an injection alcohol, which destroys the function of the nerv through or about its foramen of exit from the skul This paper does not deal with the relative merits the alternative methods; both are skilled procedur and in each case the final success depends upo specialised study and practice.

The first operations (performed with success) we devised simultaneously by Hartley[1] and Krause who removed the Gasserian ganglion itself by temporal route. With this operation there was a hig mortality, and the removal of the ophthalmic divisio of the ganglion frequently caused injury to t cavernous sinus, and also led to a trophic keratit For these reasons Hutchinson[3] advocated a parti resection of the ganglion which left intact t ophthalmic division and the adjacent sinus. In 1S Spiller,[4] as a result of a series of experiments, show that division of the sensory root of the gangli relieved the condition as effectively as removal of t ganglion with a lower mortality, no danger to t cavernous sinus, and less risk of keratitis. Since th date the division of the sensory root of the Gasseri ganglion has been practised with great success. the present time Frazier[5] advocates a partial secti of the root, and preserves the ophthalmic fibr which he believes are morphologically distinc Adson,[7] on the other hand, preserves the motor ro because he believes that neuralgia affecting t ophthalmic division is more prevalent than is oft thought. This is a difficult and serious operatio but can undoubtedly be regarded as successful the hands of the above surgeons the mortality less than 1 per cent. and the relief certain. F surgeons, however, have the time, opportunity, enough cases to enable them to achieve this deg of proficiency. Because of this, alternative a simpler methods based on alcoholic injections ha been developed, and it is the opinion of the writ that such methods give an equal chance of succe with few dangers and no mortality.

The treatment by alcoholic injection falls into tw groups. The one aims at a temporary destruction the function of the nerve at its foramen of exit fr the skull, the other at a permanent result by acti on the Gasserian ganglion itself. The first group w not be considered in this paper, but it may be me tioned that the temporary relief obtained by t method is an important accessory, both as a mea of diagnosis and treatment, to the more radic injection.

The second method depends upon the injecti reaching the Gasserian ganglion by way of th foramen ovale. There are two routes, the [illegible] transzygomatic one advocated in this country

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* Based on a paper read to the Society of British Neurolog Surgeons, Manchester, 1927.

Harris,[8] and the ascending extrabuccal route which was perfected by Hartel in Germany.[9] In 1909 Harris, while attempting to block the mandibular nerve at the foramen ovale, noticed that the injection sometimes caused anæsthesia in all the branches of the ganglion. But it was not until the publication of Hartel's paper in 1913 that a more certain method of anæsthetising the ganglion was demonstrated. In this work Hartel established the necessary technique and made a great advance on the methods of his predecessors. Without a thorough knowledge of German it is difficult to appreciate the significance of Hartel's work, and for this reason the writer has worked out the whole technique from first principles. The results, which are detailed in the following pages, closely follow those of Hartel and generally confirm his conclusions; on the other hand, certain differences have emerged and consideration is given to their interpretation.

The Hartel Injection.

Hartel found that if a needle is passed through the foramen ovale in the plane of the axis of the Gasserian ganglion it reaches the skin near the angle of the mouth. He then retraced from the outside the course of the needle and, by inserting it about the level of the upper mid-molar tooth, traversed the tissues around the mucous membrane of the mouth (guided with a finger in the mouth) until the point of the needle reached the area of bone in front and to the outer side of the foramen ovale. This surface of bone he considered was so characteristically hard and smooth that it could be used as a landmark to the foramen, which was the first depression or irregularity met with on it in working the point of the needle backwards. In this way he showed that the foramen ovale, and in consequence the Gasserian ganglion, could be located with accuracy.

Anatomical Observations.

In order to obtain a safe and accurate manipulation by this method it is necessary to examine: (1) The anatomical relations of the needle. (2) The anatomy of the skull around the foramen ovale, and especially those points which would enable one to locate the foramen by palpation with the point of a needle. These relationships are dealt with in the following paragraphs. The results given are based on work performed on the one hand in the Anatomy Department of the University of Manchester, and on the other hand in the Museum of the Royal College of Surgeons of England.

STRUCTURES LYING IN RELATION TO A NEEDLE PLACED IN LINE FROM THE ANGLE OF THE MOUTH TO THE FORAMEN OVALE.

These were ascertained from a series of dissections performed around a needle placed in the above axis. Fundamentally it was found that the needle takes a route between two planes: an internal one, which is soft and flexible and consists of the buccinator muscle and the mucous membrane of the mouth; and an external one, which is resistant and is formed by the mandible and the muscles attached to it. It will be apparent that no structure of importance is likely to lie between two such mobile planes, and this is confirmed by dissection—the space being filled entirely by a pad of fat known as the "fatty ball of Bichat."

The course taken by the needle is as follows. First it pierces the skin and superficial fat for about a centimetre, then, after crossing the few fibres of the muscles of expression, it enters the fatty ball of Bichat and traverses it in its long axis for at least 3 cm. Finally, leaving the fat, the needle reaches the external pterygoid muscle, and pursuing an oblique course crosses it for the last centimetre to reach the foramen ovale. From this it is evident that there is little danger of injury to important structures in the direct path of the needle, and consideration must now be given to those which lie near the path.

1. The *facial artery* runs in the plane of the muscles of expression about 1 cm. external to the angle of the mouth. The needle should, therefore, always be inserted still more external to the artery, so as not to injure it. Similarly the facial vein, which runs just external to the artery, should be respected. It is obvious that infection of the vein and phlebitis extending to the cavernous sinus, although never yet recorded, would be most serious.

2. The *parotid duct* arches round the anterior border of the mandible and crosses the fatty ball of Bichat to reach the mucous membrane of the mouth. Its course crosses that of the needle at a right angle. On these occasions it may conceivably be pushed aside, as there is no record of its injury or a fistula resulting.

3. The *internal maxillary artery* may take one of two courses with almost equal frequency: one deep, the other superficial to the external pterygoid muscle. When it takes a superficial course it may be injured by the needle. If so, a hæmatoma forms at once. This can readily be stopped by pressure, and the needle must be removed and inserted in another plane. In one dissection the artery took a course deep both to the muscle and to the underlying mandibular nerve, a position perfectly safe from the standpoint under consideration.

4. The *middle meningeal artery* takes a course behind the foramen ovale and, as will be emphasised later, behind the sphere of action of the needle. In 5 per cent. of cases it replaces the small meningeal artery and goes through the foramen ovale, where it might conceivably be injured. This accident is again of no practical importance, since the hæmorrhage resulting would be extracranial, and an intracranial hæmorrhage or other injury has yet to be placed on record.

5. The *Eustachian tube.*—Hartel and others consider that there is danger to this structure if the needle is manipulated deep to the foramen ovale. Observations, however, reveal two important points. First, the Eustachian tube from mouth to ear takes a course upwards, backwards, and outwards, so that the needle running in a direction upwards, backwards, and inwards would tend to glide off the tube rather than to pierce it. Secondly, the tube takes an oblique course at least 1 cm. below the foramen ovale, and forms one side of a triangle with the base of the skull and the external pterygoid plate respectively as the other sides. From this, a needle which passes deep to the foramen ovale would engage in the tissues in this triangular space and so ride above the tube. For these reasons I do not consider that the Eustachian tube is liable to be injured during these manipulations.

6. The *mandibular nerve* was found to take a course directed downwards and backwards, forming an angle of nearly 90 degrees with the external pterygoid plate. This is important when the nerve is to be located by the horizontal route through the sigmoid notch. It is evident that, unless the nerve is located at the foramen ovale itself, any other manipulation is useless. Furthermore, the nerve may run deep to the accessory ossifications in this region, and at a depth which makes its safe infiltration with alcohol impossible.

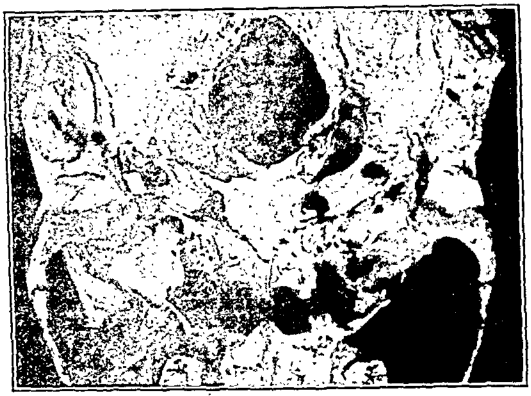
One may say, therefore, that the structures lying near to the path of the needle are unlikely to be injured, and also that no harm will result if they are actually pierced. The path of the needle itself is almost entirely through fatty tissue, and the internal maxillary artery is the only structure of importance which may occasionally lie in the direct path of the needle and in that event cannot be avoided.

THE FORAMEN OVALE AND ITS LOCALISATION.

An examination of the base of the skull shows that nothing of importance lies antero-external to the foramen ovale, whereas postero-internal lie many vital structures (Fig. 1). Hence it is advisable that any manipulation of the needle in these operations should be made in the former area. Hartel himself emphasised the fact that, if a needle is guided on to the infratemporal surface of the temporal bone, a surface smooth and hard, careful manipulation backwards would detect the foramen ovale as the first irregularity on that surface. On the other hand, Purves-Stewart[10] pointed out the value of the external pterygoid plate as a guide.

The following is a summary of my own observations and deductions on the above factors, made independently of the publications of these authorities

FIG. 1.



Base of skull, showing relations of the foramen ovale.

OBSERVATIONS MADE IN AN EXAMINATION OF 200 SKULLS.

1. The *foramen ovale* is never absent. It varies in size and shape, and in 2 per cent. of cases is so small as to make penetration by a needle impossible.

2. The *foramen spinosum* in 4½ per cent. of cases is small or absent. On these occasions it is probable that the middle meningeal artery goes through the foramen ovale.

3. The *infratemporal surface of the sphenoid bone* is smooth and hard. In two cases it was irregular, and in these a fossa was present large enough to be mistaken for the foramen ovale. When this occurs, localisation of the foramen is practically impossible (Fig. 2).

4. The *external pterygoid plate* is a muscular process, and as such is irregular in shape. For practical purposes, however, it may be considered to be rectangular. It is triangular or receding in shape in 6 per cent. of cases, and either very narrow or very broad in 2 per cent. The interest in this plate is the relation of its base to the foramen ovale. The base usually lies immediately in front of the foramen, but when the plate is very narrow this relation does not hold good, and the plate may be as much as 1 cm. in front of the foramen. The relation also may be considered to be inconstant when the border of the plate recedes. At the base of the external pterygoid plate there are accessory attachments of the external pterygoid muscle, and these may become ossified. Of the two types of ossification which have been described by Mackay[11] (Fig. 3):—

(*a*) The *pterygo-sphenoid* is a small ridge of bone which runs from the base of the external pterygoid plate on to the infratemporal surface of the sphenoid bone. It occurs with a 1 per cent. frequency only, and is not of importance.

(*b*) The *pterygo-spinous* is a more marked ridge of bone. It may be either complete or incomplete, and extends from halfway up the margin of the external pterygoid plate to the spine of the sphenoid. The writer found that this bridge of bone may take one of two positions; either deep or superficial to the spine of the sphenoid, and in consequence deep or superficial to the foramen ovale, the frequency being 5 per cent. and 1 per cent. respectively. Thus, in the greater percentage of cases, this ossification, which seemingly is in such intimate relation with the foramen ovale, is deep to it and is actually out of the area of manipulation with the point of the needle.

It has now been shown that the infratemporal surface of the sphenoid bone is consistently smooth and hard, and that the base of the external pterygoid plate is in constant relation to the foramen ovale. The conclusion is drawn that the foramen ovale is best and most safely located if use is made of both these points and the depth of the foramen is estimated from the foramen surface, and its position backwards from the latter plate. The technique of injection based on this will be described in detail elsewhere.

The 400 observations made by the writer show that this method would have resulted in failure only to the following extent, and for the reasons stated:—

	Times.	Per cent.
1. A small foramen ovale	8	2
2. A superficial pterygo-sphenoid ossification..	4	1

and there would also have been difficulty to the following extent and for the following reasons:—

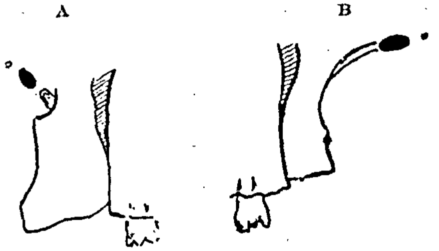
	Times.	Per cent.
1. A narrow external pterygoid plate ..	4	1
2. A fossa on the infratemporal surface of the sphenoid bone	2	½
3. The presence of an accessory ossification ..	20	5

The injections performed at autopsy, as detailed below, will be seen to confirm these figures.

OBSERVATIONS MADE AS A RESULT OF INJECTIONS PERFORMED AT AUTOPSY.

These were made from a series of 100 injections, 51 of which, including any case in which difficulty was experienced, were confirmed and recorded after removal of the skull cap. The other 49 were so straightforward that such confirmation was not carried out. The technique used was that of Hartel. The skin puncture was made 1–2 cm. lateral to the angle of the mouth, or 2–3 cm. above this point, the former being referred to as the "vertical" type, the latter as the "horizontal" type. The point of the needle was guided between the buccinator muscle and the mandible on to the infratemporal surface of the sphenoid bone, and with the aid of this surface and of the adjacent external pterygoid plate the foramen ovale was localised.

FIG. 2.



External pterygoid plate. (A) Fossa at base; (B) receding type.

In the 51 recorded cases:—

(*a*) The ganglion was accurately located in 47.

(*b*) Difficulty was experienced in five, and only when the more horizontal injection was performed.

(*c*) The dura was pierced twice, and with the vertical injection only.

(*d*) The *sphenomaxillary fissure* was reached on one occasion, and the error recognised and corrected at the time.

(*e*) Failure occurred in four cases, 4 per cent. of the whole series.

The causes of failure were: (1) A depression which was present on the infratemporal surface of the sphenoid bone. The piece of bone was removed for examination and this depression was found to lie just in front of the foramen ovale, and to resemble it in size and shape. The foramen itself was normal, but it was impossible to ignore the irregularity lying in front of it (Fig. 2). (2) A foramen ovale too small to admit the point of the needle. (3) and (4) Fibrosis round the foramen too dense to pierce unless undue force was used.

(*f*) When inside the skull, the needle lay in the axis of the third division of the ganglion and, if pushed in further, reached the sensory root of the ganglion. In five cases only did it tend to approach the second division, and in these cases it ran under the division.

The motor root of the ganglion was in all cases untouched (*Fig.* 4).

Discussion.

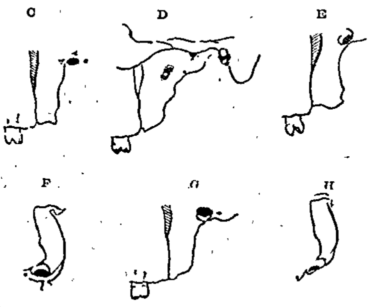
Evidence has accumulated during the course of the present investigation to suggest that what is called "injection of alcohol into the Gasserian ganglion" does not describe what actually happens, and that the alcohol affects the sensory root of the ganglion more than the ganglionic tissue itself.

This evidence may be outlined as follows:—*Anatomical:* (*a*) The planes in which the ganglion and its division lie; (*b*) the shape and character of the foramen ovale; (*c*) the plane in which the needle runs; (*d*) the attachments of the dura mater to the ganglion. *Experimental:* The course seen to be taken by dyes injected into the region of the ganglion. *Clinical:* (*a*) The areas of anæsthesia following injection; (*b*) the interpretation of the nerve paralyses following injection.

ANATOMICAL EVIDENCE.

(*a*) Within the middle fossa of the skull there is a groove on the petrous portion of the temporal bone over which runs the sensory root of the Gasserian ganglion. The ganglion itself, lying in a continuation of the groove, is really formed by the convergence of its three divisions. Of these divisions the third is seen to be in direct continuity with the sensory root and leaves the skull at the foramen ovale; the first forms an angle of almost 60 degrees with the third and takes a horizontal course to the sphenoidal fissure; the second lies between the two, nearer and on a similar plane to the first division. In other words, the first and second divisions of the ganglion do not lie in continuity or in the same plane as the sensory root, whereas the third division may be considered to do so.

FIG. 3.



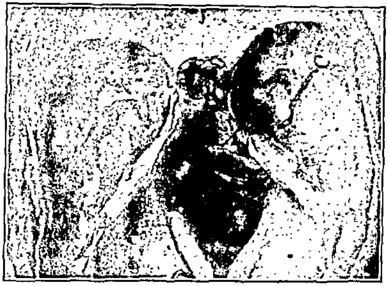
External pterygoid plate with accessory ossifications. (C) Pterygo-sphenoid. (D) Pterygo-spinous: complete deep; (E) complete superficial; (F) partial superficial (from within); (G) partial deep; (H) partial deep (from within).

(*b*) The foramen ovale is a channel in the sphenoid bone for the passage out of the skull of the third division of the ganglion. It may be regarded as a cylinder, and from its formation its axis is that of the nerve and, therefore, that of the sensory root.

(*c*) Thus, a needle entering the foramen ovale by the Hartel route (i.e., in the axis of the ganglion) will tend to take a natural route through the central axis of the foramen, along the third division to the ganglion, and then into the sensory root itself—a deduction confirmed by injections on the cadaver.

Variations from this central route do occur, but are not common, and in most cases can be avoided. The variations are as follows. When the axis is more vertical than usual, the needle may reach the dura mater, cerebro-spinal fluid is seen to escape, and the error can then be rectified. When it is more horizontal its course is limited by the shape of the foramen, and it is almost an anatomical impossibility to take a course deep to the nerve and in relation to the periosteum. A lateral deviation of the needle is possible, and may account for some of the irregular results obtained in these cases. The medial deviation, because of the direction of the needle, is impossible.

FIG. 4.



Dura mater reflected to show Gasserian ganglion with wire representing needle in situ (x—x).

From this it may be suggested that, if the most horizontal direction in which the needle will pierce the foramen is aimed at, the cylindrical shape of the foramen makes it almost a certainty that the correct axis will be maintained. In these cases the sensory root can actually be reached with the point of the needle without danger.

The series of 51 Hartel injections (performed at autopsy) gave the following comparative results:—

1. In 21 "*vertical*" injections: No difficulty was experienced; the dura was pierced twice; the point of the needle deviated five times from the axis of the sensory root.
2. In 30 "*horizontal*" injections: Difficulty was experienced five times; the dura was never pierced; the axis of the sensory root was always maintained accurately.

These results indicate that it is an anatomical probability that the point of the needle in the Hartel injection will tend to reach the sensory root of the ganglion if it is pushed through the foramen ovale far enough.

Two layers of dura mater cover the Gasserian ganglion, forming what is known as the cave of Meckel. The dura is definitely adherent to the ganglion, but not to its sensory root or to the divisions. From this an "hour-glass" effect on the accumulation of alcohol can be conceived. If the alcohol is injected just inside the foramen ovale and into the fibres of the third division of the ganglion, it will first of all tend to accumulate between the ganglion and the foramen ovale; then, limited by the attachment of the dura to the ganglion, will pass along the division, along the postero-external part of the ganglion, and into the region of the sensory root, where it is again possible for it to accumulate. Thus the alcohol may reach the sensory root without it being necessary for the point of the needle to do so. An eccentric puncture, with the point of the needle actually in the ganglionic tissue itself, will be necessary to anæsthetise other parts of the ganglion than its external margin.

EXPERIMENTAL EVIDENCE.

The following evidence is derived from observation of the course seen to be taken by dyes injected into the region of the ganglion. When a watery solution of a dye is injected through the foramen ovale into the region of the ganglion, it diffuses so readily that the observation is of little value except as showing that the dye flows to the sensory root. By using a gelatin mass stain, however, the course of the spread of the dye can be observed, and it is possible to examine the nerve tissue thus affected.

When a small amount of this stain was injected slowly, it was seen that it accumulated central to the point of the needle and apparently in the ganglion itself. Later section of the nerve tissue, however, revealed that it was not in the ganglionic tissue that *the stain lay, but in between the fibres of its root.* When larger quantities were injected more rapidly, the whole area became flooded with the stain, which spread along the sensory root and into the posterior fossa of the skull.

CLINICAL EVIDENCE.

The following table, based on a series of 25 injections performed by the writer, shows the areas of anæsthesia which resulted, and the occasional nerve complications which arose.

Case No.	Anæsthesia in division.	Complications.	Case No.	Anæsthesia in division.	Complications.
1	3	—	15	1, 2, 3	—
3	3	—	16	1, 2,	K.
4	3	—	17	1, 3	—
6	1, 2, 3	6	18	1, 2, 3	—
7	3	—	19	1, 2, 3	—
8	3	—	20	1, 2, 3	K.
9	1, 2, 3	6 K.	21	1, 2, 3	—
11	3	—	22	1, 2, 3	—
12	3	—	23	1, 2, 3	K.
13	3	—	24	1, 2, 3	6, 7, 8 K.
14	3	—	25	1, 2, 3	—

From this table it is evident that two groups of anæsthesia result, one affecting the third division alone, the other all three divisions. It is rare for any other combination to occur (actually two cases in 25) and in this sequence the absence of the combined anæsthesia of divisions three and two is notable. It would be expected that, if the ganglionic tissue were involved, irregular areas of anæsthesia, such as divisions three and two, or two and one, would be found. In the circumstances it is reasonable to assume, with the support of the anatomical and experimental evidence outlined, that the combined anæsthesiæ follow effect on the sensory root, whereas the anæsthesia of division three alone is from effect on the peripheral nerve only. This assumption is further supported by the experience that effect on the former tends to be permanent and on the latter temporary.

It will be noted that the sixth cranial nerve was paralysed on three occasions, but never the third or the fourth nerves. This can only be explained if the alcohol spreads along the sensory root of the ganglion and affects the sixth nerve as it leaves the posterior fossa of the skull. The nerve in this situation has been observed in some cases to lie in actual contact with the sensory root. That this is the course taken by the alcohol is finally confirmed by the twenty-fourth case. Here there was a paralysis of both the seventh and eighth nerves as well as of the abducens. This combined anæsthesia is only possible if these nerves are affected at the internal auditory meatus, a foramen lying just below the groove for the sensory root when the head is in the position used in operating. As less than 1 c.cm. of alcohol was injected in this case, it must have spread directly along the sensory root to cause these effects.

In conclusion, the weight of the evidence leave little doubt that the sensory root is more liable t affection than the Gasserian ganglion when th Hartel injection is performed. Elsewhere it will b shown that, as may be expected, the effect on th sensory root may be permanent. Where this is s the results of injection compare favourably wit those of the *major operations.*

Summary.

1. Trigeminal neuralgia may be treated with succe either by operation or by the injection of alcoh into the region of the Gasserian ganglion.

2. The Hartel technique gives a satisfactory meth of reaching the ganglion with certainty.

3. It is shown that the route taken by the need is free from danger, the foramen ovale can be locat with accuracy and safety if its relations to both t infratemporal surface of the sphenoid bone and t external pterygoid plate are appreciated.

4. A high, "horizontal" Hartel route is the m accurate, and with its use it is suggested that it the sensory root, and not the ganglionic tissue itse that is affected by the alcohol. If so, the resu obtained may be expected to be permanent, and compare with those obtained by major operation.

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BISMUTH OXYCHLORIDE OINTMEN

IN THE TREATMENT OF

LUPUS ERYTHEMATOSUS.

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DURING the last two years dermatologists h taken an increasing interest in the treatment of lu erythematosus with injections of bismuth. So —e.g., Segrè,[1] consider that the results of this line treatment compare favourably with those obtai by the injection of gold salts, and prefer b because it is much less toxic and may be given with risk of aggravating a tuberculous lesion within body.

A survey of the work published on this subj during the last two years shows that the major of workers have relied on injections of bismuth, a have not applied bismuth locally or given it by t mouth. In January, 1930, I stated[2] that I had n been able to obtain satisfactory results by t administration of bismuth oxycarbonate or bismuth salicylate per os, and that local applications of Suspensol (a colloidal preparation of metallic bismuth in an ointment basis) had not, in my hands, given satisfactory results. I recorded one case in which satisfactory results had been obtained by the use of 5 per cent. colloidal bismuth oxychloride ointment.

In Europe, inunction with mercury has been used as a treatment for syphilis since 1497, and it was therefore almost inevitable that, as bismuth commenced to supplant mercury in the treatment of this disease, attempts should be made to administer bismuth by inunction. Certain syphilologists have reported favourably on this method of administration; others have categorically asserted that the amount of bismuth absorbed is insufficient to produce any therapeutic effect. The question is still sub judice but, as it had been shown by Nicolas, Lacassagne, and Rousset[3] that injections of bismuth would cure lupus erythematosus, it seemed rational to suppose that good results might be obtained by applying bismuth ointment locally. I therefore prescribed suspensol in several cases of lupus erythematosus, but was not satisfied with the results obtained.

It is generally accepted that oxychloride of bismuth injected intramuscularly is absorbed more readily by the organism than metallic bismuth. It therefore seemed to be feasible to conduct experiments with an ointment containing bismuth oxychloride, preferably in a colloidal state. After many experiments, a research chemist at the St. Vincent Laboratories, 160, Bath-street, Glasgow, was able to manufacture an ointment containing 5 per cent. of the salt in the required colloidal state, and the results obtained by the use of this ointment as a local application for chronic lupus erythematosus have been satisfactory. Clinical trial showed that, in the majority of cases, better results were obtained if the bismuth oxychloride content was increased to 10 per cent. The ointment has been put on the market by the above-named laboratories under the trade name of Bismurung. It is, perhaps, advisable to add that I have no financial interest in its sale.

Results in Lupus Erythematosus.

In all cases the ointment has been applied freely and rubbed with moderate vigour on to each of the affected areas for at least two minutes twice daily. In a few cases of lupus erythematosus it has caused slight irritation and itching of the affected part, but when rubbed into healthy skin it has never caused any local irritation. It has now been prescribed for 19 cases of lupus erythematosus and in none has its application had any but beneficial results. In the majority, injections of bismuth or bismuth salts have been given at fortnightly or monthly intervals in order to intensify the action of the ointment, but although I can quote but one case (No. 11) of lupus erythematosus which has been apparently cured by the use of the ointment alone, this is merely because this line of treatment has only been under investigation during the last 12 months. I am, however, convinced that the average case of this disease can be cured by the persevering application of the ointment alone, but the time in which a cure may be obtained can be shortened by giving a few injections of one of the usual bismuth preparations. Conversely, the use of the ointment reduces the number of injections of bismuth necessary for cure, and incidentally ensures that healing will take place without the formation of a scar.

The following is a brief record of ten of the most typical cases which have been treated:—

CASE 1.—Mr. A., aged 40, had been treated since 1928 with local applications of acid nitrate of mercury for numerous discoid patches of lupus erythematosus affecting the left cheek and the left side of the neck. From July 8th, 1929, to Jan. 11th, 1930, he received a total of 4·6 g. of metallic bismuth intramuscularly. Progress under this line of treatment was disappointing. From Jan. 17th, 1930, to May 30th, 1930, 10 per cent. bismuth oxychloride ointment has been used and he has received only 0·8 g. of metallic bismuth intramuscularly during this period. Three of the discoid patches have disappeared and the remainder are fading.

CASE 2.—Miss B., aged 26, had severe lupus erythematosus affecting the whole of both cheeks, the nose and forehead, and a few discoid lesions of the scalp. From July, 1927, to April, 1929, she had received much local treatment with ultra-violet light. Salicin had been administered internally, and numerous external applications had been prescribed. From April 13th to Dec. 7th, 1929, she received 4·8 g. of bismuth and 1·5 g. of bismuth oxychloride deep subcutaneously. Great improvement took place during October and November, and in January, 1930, it was confidently anticipated that she would be cured within a few weeks. During January and February, 1930, no improvement whatsoever occurred, despite the deep subcutaneous administration of 1·2 g. of bismuth oxychloride. On Feb. 27th she was given 10 per cent. bismuth oxychloride ointment, and was pronounced cured on June 24th, having only received two injections each of 0·4 g. of bismuth oxychloride between Feb. 27th and June, 1930. There is now no scarring of the previously affected parts, and the skin appears to be absolutely normal.

CASE 3.—Miss C., aged 29, had been treated since 1923 for lupus erythematosus affecting the nose and cheeks. The areas had been treated with carbon dioxide snow, acid nitrate of mercury, and various ointments. From Oct. 2nd, 1927, to Jan. 31st, 1930, she received a total of 2·4 g. of metallic bismuth and 3·6 g. of bismuth oxychloride deep subcutaneously. The cheeks became normal during December, 1929, but the condition of the nose remained unchanged. On Jan. 31st, 1930, 5 per cent. bismuth oxychloride ointment was prescribed and applied to the nose twice daily. By April 9th only slight progress had been made, and she was given a 10 per cent. ointment. She was discharged as cured on June 21st, 1930.

CASE 4.—Miss D. had lupus erythematosus (the lesions being vividly erythematous) affecting the eyelids and nose and extending downwards over the cheeks to a distance of one inch from the eyes. From July to October, 1929, a total of 4·8 g. of metallic bismuth was given by injection. No improvement resulted. From November to December 1·6 g. of bismuth oxychloride were injected. Slight improvement then occurred, and the edges of the lesions began to clear up. No marked improvement occurred until Dec. 14th, 1929, when the patient was given 5 per cent. bismuth oxychloride ointment; considerable improvement was seen during the ensuing 14 days. She has received no injections since December. The strength of the ointment was increased to 10 per cent. in March, 1930. When last seen on June 2nd she reported that progress had been slow but continuous. The edges of the lesions were slowly receding and healing had taken place in the central portions of the affected areas. No scarring had occurred.

CASE 5.—Mrs. E., aged 60, had scattered discoid lesions of lupus erythematosus on the forehead, nose, cheeks, and neck. The distribution was bilaterally symmetrical and the scalp was not affected. The eruption had been present for two years. When first seen on March 4th, 1930, she was given an injection of 1 c.cm. of bismogenol, and 5 per cent. bismuth oxychloride ointment was prescribed. Almost immediately she began to improve. The injection was repeated once every fortnight until May 27th, when the lesions had almost disappeared. When last seen on July 27th she was discharged as cured.

CASE 6.—Miss F., aged 34, had lupus erythematosus of the hands of unknown duration. From April 10th, 1929, to May 21st, 1930, a total of 3·4 g. of metallic bismuth was given intramuscularly. The condition improved slowly until Feb. 1st, 1930, when 10 per cent. bismuth oxychloride ointment was prescribed. Progress has since been slightly more rapid, but the patient is not yet cured.

CASE 7.—Mrs. G., aged 31, had lupus erythematosus, affecting the conchæ of both ears, diagnosed in November, 1928. A small area immediately anterior to the left ear was also affected. During 1929 she received a considerable amount of treatment with ultra-violet light, painting with acid nitrate of mercury, &c. No improvement occurred. During December, 1929, she received a total of 0·8 g. of bismuth oxychloride, but thereafter she refused to have any more injections. The lesions did not improve until she was given a 5 per cent. bismuth oxychloride ointment. By May 7th, 1930, the patch on the cheek had disappeared, leaving no scar, and the affected areas on the ears were practically cured. The 10 per cent. ointment was then prescribed, and six weeks later the right ear and the cheek were completely cured. The concha of the left ear is still affected.

CASE 8.—Mr. H., aged 45, had lupus erythematosus of 18 months' duration in typical bat's-wing distribution. He was first seen on April 17th, 1930. An injection of 0·3 g. of bismuth oxychloride was given and 10 per cent. bismuth oxychloride ointment was prescribed. When next seen on May 9th the eruption on the nose had disappeared and three-quarters of the previously affected areas of the cheeks were normal, the lesions having faded, leaving no scar. Another injection of bismuth oxychloride was given and the patient has not returned for further treatment.

CASE 9.—A spinster, aged 27, had had two small areas of lupus erythematosus on the nose and right cheek for five months. An injection of 0·3 g. bismuth oxychloride was given when the patient was first seen on May 14th, 1930, and 10 per cent. bismuth oxychloride ointment was prescribed. When seen a month later the lesions had practically disappeared.

CASE 10.—Miss I., aged 41, had lupus erythematosus of the face in bat's-wing distribution and the fingers were also affected. There was a two years' history when she came for treatment on March 17th, 1930. 1 c.cm. of bismogenol was given intramuscularly, and 10 per cent. bismuth oxychloride ointment was prescribed. A month later she had improved considerably, and the injection was repeated. On May 17th the face was pronounced cured, and the condition of the hands had greatly improved.

DISCUSSION.

In the typical cases of bat's-wing lupus erythematosus I have found that treatment by injection alone will, in time, produce a cure, but the surface of the skin of the previously affected area remains slightly "rough," the "roughness" apparently being due to a slight degree of hyperkeratosis. If, when the injections are discontinued, the ointment is applied the skin rapidly becomes normal in all respects. In a previous paper [2] I suggested that "any improvement in a case
of lupus erythematosus after the injection o bismuth,
or bismuth salts, is probably due to the proj which
bismuth possesses in preventing the t from
reacting normally to the toxins (or bact hich
cause the symptoms of the disease. ld
therefore expect that the persons w n
apparently cured will sooner or later e
rence of the lesions." Only one case wh
as being cured has returned with fresh

CASE 11.—Mrs. G., aged 39, first se
1929, presented two small rounded are
matosus on the forehead and left temp
present for 17 months. At irregular
ensuing four months she received a to
intramuscularly. On Sept. 10th, 1929, s
cured, but on March 15th, 1930, she return
that during the previous three weeks the
recommenced. She presented two small patch s
erythematosus on exactly the same areas as had previously been affected. She was ordered 10 per cent. bismuth oxychloride ointment, no injection being given, and a month later she reported for examination and appeared to be cured.

ember,
left ear
considerable
Painting with

This case seems to suggest that the prompt use of the ointment can abort a relapse of the disease.

There has, unfortunately, been no opportunity for using the ointment in a case of acute lupus erythematosus, and I have been unable to find any record of the treatment of a case of this disease with bismuth. In my opinion the most satisfactory line of treatment would be to administer deep-sub-
been osly, as frequently as possible, a water-soluble
with the lt—e.g., sodium-bismuth-thioglycollate—
by the alt be *rapidly absorbed*, and to apply 10 per cent. oxychloride of bismuth ointment to the affected areas (or to a large part of the affected area) of the skin. This line of treatment might, perhaps, reduce the high percentage of mortality of these cases, and would probably prevent the common sequelæ in those patients who do recover—viz., the development of chronic lupus erythematosus, or the production of cicatricial atrophy of the skin of the affected parts.

Other Uses of the Ointment.

The ointment has been used in a few cases othe than lupus erythematosus. Two cases of lupu vulgaris were aggravated by it. As was expected, n response was obtained in a case of lichen ruber planu affecting the legs. Two cases of pustular folliculiti of the neck cleared up within 48 hours of the applica tion of the ointment, but one would have expected th same result from ung. hydrarg. ammon. dil. Neverthe less these two cases seem to show that the ointmen has a certain antiseptic effect. This suppositio is to a slight degree confirmed by the following cases:—

CASE 12.—Mrs. K., aged 70, had suffered since Septembe 1927, from tinea unguium affecting three fingers of the righ hand. Antiseptic applications, ranging from ichthyo to mercurochrome, and including various forms of iodine have been used. Ointments have also been applied. Owin to the patient's age it has not been considered advisabl to remove the nails. The disease has been extremel resistant to treatment, but the condition of the nails ha steadily improved since March, 1930, when bismuth oxy chloride ointment, 10 per cent., was prescribed.

CASE 13.—Miss L., aged 20, has tinea of the nail of th first finger of the right hand. Since June, 1929, a larg number of the usual antiseptic applications have been use The condition has from time to time improved, only to relaps On May 9th bismuth oxychloride, 10 per cent., was prescribe and the condition of the nail has steadily improved. Ther has not been any relapse since that date.

CASE 14.—Mr. M., aged 35, with no previous history venereal disease, who denied extra-marital congress, ha marital congress on May 1st. On May 8th two small sor were first noticed on the inner side of the prepuce. The spread rapidly, and he reported at hospital on the 12t On examination the sores were found to be non-indurat and in all respects typical chancroids. The Wasserman reaction was negative. Serum from the sores was examine microscopically, but no *Spirochæta pallida* were foun Saline baths were prescribed, and on May 19th furth microscopical examination failed to reveal the presen of *S. pallida*. The lesions were spreading, and by th date were each about 1·2 cm. in diameter. Saline bath were continued, but as no *S. pallida* were found, and as th sores were enlarging, washes of perchloride of mercur 1/3000, and ung. hydrarg. (half strength) were prescribed o May 29th. The chancroids slowly increased in size, despit this treatment, until June 12th, when bismuth oxychlori ntment, 10 per cent., was prescribed, to be applied twic ily. By June 19th one of the ulcers was complete aled, and the second ulcer was healed by June 26th he Wassermann reaction on June 26th was negativ

CASE 15.—An unmarried man, aged 31. contracted gonorrhœa in 1928, and was discharged as cured after three months' treatment. Exposure to venereal infection occurred on May 15th, 1930, when there had been no previous exposure for at least four months. On the 20th he noticed a sore on the prepuce and reported for treatment on the 22nd. He then presented a small non-indurated irregular preputial sore, associated with a slight enlargement of the inguinal glands. Microscopical examination failed to reveal the presence of *S. pallida*. The Wassermann reaction was, however, positive. Lotio hydrarg. perchlor., 1/3000, was prescribed as a local application. On May 29th an injection of neosalvarsan, 0·45 g., was given, and as the sore had not responded to the treatment but had enlarged slowly bismuth oxychloride ointment was prescribed. The injection of neosalvarsan was repeated on June 5th, 12th, and 29th, and the sore healed on or about July 1st. Antisyphilitic treatment was continued, bismuth injections also being given. A tentative diagnosis of chancroid in a syphilitic patient was made.

The cases quoted seem to show that the ointment may be of value in cases of tinea unguium and of chancroid. It has not been employed in cases of syphilis, but it may be presumed that it has a certain use as an application to primary chancres, condylomata, and, perhaps, to the rashes of secondary syphilis in order to diminish the infectivity thereof during the latent period between the administration of arsenobenzol and the disappearance of the visible symptoms of the disease.

The ointment has been found of some value in hastening the absorption of gummatous lesions of the skin:—

CASE 16.—A steward, aged 38, contracted syphilis five years ago, but received no arsenobenzol treatment. When seen on March 31st, 1930, he presented multiple gummata on the forearms and on the back of the left hand. The Wassermann reaction was strongly positive. During April he received a total quantity of 2·25 g. novarsenobenzol intravenously and 0·9 g. of bismuth oxychloride intramuscularly. As a local application ung. hydrargyri, half strength, was given. The gummata rapidly decreased in size, but disfiguring blue marks remained on the skin. Routine antisyphilitic treatment was continued, and on May 5th bismuth oxychloride ointment, 10 per cent., was prescribed as a local application. Fourteen days later the skin of the affected area was normal in colour and the last traces of the gummata had disappeared.

It is suggested that the bismuth oxychloride ointment may be found of use in the treatment of yaws.

Bismuth Inunction.

As Sequeira[4] has said, "stereotyped routine" in the treatment of syphilis "has given place to a plasticity which indicates a tardy appreciation of accumulated experience," and one of the results of this plasticity is that the administration of mercury by inunction is but seldom advocated by the syphilologists of this country. Nevertheless, the majority of neurologists agree that, in cases of pre-ataxic and early ataxic tabes, better results may be obtained by a judicious employment of "mercury rubbing" and neoarsenobenzol therapy than by the employment of neoarsenobenzol and mercury or bismuth injections. It seemed, therefore, that it was of interest to determine whether or not the colloidal bismuth oxychloride in the ointment was absorbed by the skin in sufficient quantities to make bismuth inunctions a feasible proposition. To this end the writer requested the services of Mr. Arthur Padley of Liverpool, who for the last 25 years has had a very considerable experience of the Aachen technique of mercury rubbings. On the first occasion a drachm of 10 per cent. bismurung was rubbed into the back of a healthy male patient for 20 minutes. The total urine for the ensuing 24 hours was collected, but no bismuth was found to be present in the urine, although four hours after the rubbing the patient complained of a metallic taste in the mouth. The experiment was repeated on the same person a fortnight later. The saliva and the urine were both analysed, but no bismuth was found in any specimens taken up to 40 hours after the rubbing.

A 20 per cent. bismurung was obtained, and two males submitted to rubbings. One of them, aged 21, 6 ft. 1 in. in height and 150 lb. in weight was healthy. The other, aged 23, 5 ft. 4 in. in height, weighing 10 st., was suffering from chancroid but was otherwise healthy. Mr. Padley rubbed these two patients with one drachm of 20 per cent. bismurung ointment daily for one week. The rubbing was most thorough, and lasted for 20 minutes on each occasion, various areas of the body being treated on different days, in accordance with the Aachen technique. No ill-effects were complained of by the patients, who were invigorated by the massage, and the ointment did not cause any irritation of the body, even on the hairy areas of the legs. The total urine passed by the patients each day for a week was collected and mixed and was then sent to Miss E. Sadler, M.Sc., of the Department of Pharmacology of Liverpool University, for analysis. Only very small amounts of bismuth were found in the urine. As a control to this experiment the urine taken from three different patients who had received intramuscular injections of bismuth oxychloride was subjected to analysis, and Miss Sadler had no difficulty, not only in detecting the presence of bismuth, but also in estimating quantitatively the amount thereof in the samples. The following table shows in detail the results of this experiment:—

Data.—In 1 drachm of 20 per cent. bismurung there is approximately 0·78 g. of bismuth oxychloride; 0·78 g. of bismuth oxychloride contains 0·0265 g. of bismuth:—

Case A.

Day.	Total amount of urine passed in 24 hours.	Amount of total daily output of urine examined.	Amount of bismuth found.	Total amount of bismuth excreted in 24 hours.	Concentration of bismuth in mg. per 100 c.cm. urine.
	c.cm.	c.cm.	mg.	mg.	mg.
Control.	—	80	Nil.	—	—
1st ..	910	100	Nil.	—	—
2nd ..	1187	237	0·005	0·025	0·0021
3rd ..	480	100	0·015	0·075	0·0150
4th ..	1430	286	0·005	0·025	0·0018
5th ..	1180	236	0·008	0·040	0·0034
6th ..	490	100	0·010	0·050	0·0100
7th ..	670	134	0·010	0·050	0·0075

Case B.

Day.	Total amount of urine passed in 24 hours.	Amount of total daily output of urine examined.	Amount of bismuth found.	Total amount of bismuth excreted in 24 hours.	Concentration of bismuth in mg. per 100 c.cm. urine.
Control.	—	80	Nil.	—	—
1st ..	1050	100	Nil.	—	—
2nd ..	490	100	0·010	0·050	0·0100
3rd ..	430	90	0·007	0·033	0·0080
4th ..	1170	234	0·005	0·025	0·0017
5th ..	1280	256	0·010	0·050	0·0039
6th ..	650	130	0·005	0·025	0·0038
7th ..	760	152	0·010	0·050	0·0066

This experiment seems to show that, while bismurung may be of some value as a local application in the treatment of syphilis, it is valueless if used as an inunction.

Summary.

(1) A preliminary report has been submitted upon the treatment of chronic lupus erythematosus with bismuth oxychloride ointment. (2) Of a series of 19 cases of chronic lupus erythematosus, all of which have benefited from the use of the ointment, ten have been reported in detail. Of these, five have been cured by the use of the ointment, in conjunction with injections of bismuth, and the clinical reports indicate that in many cases the disease may be cured by the local application of the ointment, without injections of bismuth. (3) Cases have been quoted showing that the ointment appears to have a slight antiseptic or bactericidal effect; the ointment has been employed with advantage in two cases of tinea unguium and two cases diagnosed as chancroid. (4) It is shown that, while the ointment may be of value as a local application in the treatment of yaws and syphilis, it is valueless if administered by inunction.

It is my pleasant duty to acknowledge my indebtedness to Prof. W. J. Dilling and to Miss E. Sadler, of the Pharmacological Department of Liverpool University, for their assistance in the laboratory work detailed in this paper.

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MEDICAL SOCIETIES

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the West London Hospital on Jan. 9th, with Dr. H. H. SANGUINETTI, the President, in the chair, when a discussion was held on

Malignant Disease of the Large Intestine.

Mr. GORDON TAYLOR, opening the discussion, said that cancer of the alimentary tract accounted for quite half the total number of deaths which resulted from malignant disease, and that the statistics of operations done by British surgeons compared favourably with those reported from other countries. When cancer of any region of the body was under consideration, the safety of a suggested operative procedure was not the only factor to be regarded. Pending a much greater knowledge of cancer than was so far possessed, the brightest prospect of cure was still offered by ruthless surgery. Concerning methods of operating, when the growth was on the distal side of the cæcum, cæcostomy was, in most cases, the procedure of choice. A two-stage, or even a three-stage operation was a safety factor. In cases in which the colon was secondarily involved, even if partial obstruction were present, Mr. Gordon Taylor preferred to operate in stages; it was better to save a patient in two or three months than to kill him in 24 hours. Blood transfusion was particularly indicated in cases in which there was associated intestinal hæmorrhage; it was also valuable in dealing with post-operative shock. He had not had much experience of preliminary immunisation. With regard to methods of intra-abdominal anastomosis, many subjects of cancer were elderly and their vessels were already showing degenerative changes. His own custom was to avoid the use of all large crushing clamps, and, as far as possible, he chose for his incision the sides of the body or the flank close to the tumour, thus keeping clear of the middle line of the abdominal wall and the mid-stream of the abdominal cavity. He believed that the only really radical operation for a carcinomatous rectum was the abdomino-perineal method of Mr. Ernest Miles, though admittedly this procedure was of a magnitude which made many surgeons reluctant to embark on it, and sometimes consideration of safety required the performance of a less radical operation. It was with reluctance that, in more cases than he liked, he himself felt compelled to carry out what he knew to be a less perfect procedure. The statistics at St. Mark's Hospital showed 28·5 per cent. of five-year cures; and the results on a five-year basis reported from this country and from abroad showed remarkable similarity. Mr. Gordon Taylor's own end-results did not justify the optimism expressed by those practising the perineal operation alone. In an ideal subject, the division of the abdomino-perineal operation into two stages rendered it much less formidable.

The modification of technique used by him in the perineo-abdominal was that described by Mr. Grey Turner in 1920. The main portion of the operation was devoted to the perineal stage, the other, the abdominal, being brief.

In regard to radium, he asked whether it was likely that the introduction of radium tubes into the mesentery would act as a barrage against the upward spread of cancer cells which were not regarded as radio-sensitive. He considered that the greatest factor of safety in the management of cases of carcinomatous rectum was the judgment of the surgeon, who must take into consideration the age, sex, cardiovascular system, as well as the bodily configuration of the patient. The fact that so many statistics concerning cancer in the rectum and colon were based on a three-year survival seemed to indicate a spirit of pessimism. It was questionable whether one ought to advise a patient to submit himself to a serious operation if the only prospect this seemed to offer was a miserable three years of life. A mere colostomy might give a further life of from two to eight years.

DIAGNOSIS.

Dr. C. E. LAKIN raised the subject of diagnosis, basing his remarks on a case of an old woman who for nearly 20 years was in the cancer wing of Middlesex Hospital. In that wing, beds were provided for patients until, in the words of the Charter, they were either relieved by art or released by death. The release of this patient was by death. She had stricture of the rectum and a very large liver. During her stay in hospital, the diagnosis was carcinoma of the rectum, with secondary deposits in the liver; yet she lived for a very long time. At the autopsy a stricture was found just within reach of the finger from the anal margin, and an enormous mass in the liver consisting of debris and partially calcified pus. She had had an amœbic ulcer of the bowel; the lower ulcer had healed, and the supposed growth was simply a stricture, while what was supposed to be a metastasis in the liver was the large amœbic abscess from which infection had died out, and which was innocuous in the later stages. Generally speaking, the symptoms of carcinoma of the colon were not always recognisable at first. In one class of case the patient had marked anæmia when advice was first sought. In cases o carcinoma of the cardiac end of the stomach it wa sometimes difficult to say with certainty, before an elaborate examination was made, that the condition was gastric carcinoma and not pernicious anæmia Commonly, however, in gastric carcinoma, there wa a story of bowel irregularity. Another class of cas was also liable to cause confusion. For example an old woman who came up for operation was emaciated, had pyrexia, and complained of abdomina pain. She had a leucocytosis of 22,000. The diagnosis made was diverticulitis, and no operation was performed. When, later, the patient died a small annular carcinoma of the sigmoid was found and this had ulcerated posteriorly. The case had been misleading because there had been no obstruction and the patient had few symptoms except loca tenderness and fever.

Dr. BAKER spoke of precarcinomatous conditions He said that in the intestinal canal adenomatous conditions were often encountered which might result eventually in definite malignant disease. He showed microscopic sections from a case in which there was a growth of the small intestine. He drew particular attention to a raised ridge which ran round the bowel and seemed like an elongated papillomatous area. It looked like an exaggerated fold of the mucosa, and the point at which the change from the normal took place to this thickened ridge was marked. His view was that tumours started in this way, as an area in the intestine which had undergone precancerous changes, and not always as a small focus or a few cells.

Dr. P. MONKHOUSE spoke on the radium treatment of carcinoma of the rectum, remarking that he did not think the outlook in this respect was as hopeless as Mr. Gordon Taylor had indicated. In squamous-celled carcinoma of the anus, quite good results could be expected from radium, and it was, he thought, well worth while to treat such cases with radium, perhaps doing a preliminary colostomy. In rectal carcinoma the response to irradiation was very variable. Shortly before Christmas, 1930, he began to treat, with radium, a patient who had columnar-celled carcinoma, since the decision was against operation. He had inserted radium from the perineum so as to surround the growth, and the reaction of the growth to it had been very good. Generally speaking, radium treatment should not be recommended for columnar-celled carcinoma except in inoperable cases, since the reaction could not be forecast with any certainty.

Mr. W. B. GABRIEL emphasised the importance of what could be termed the old-fashioned clinical methods in diagnosing carcinoma of the colon; the tendency at the present day was to go straight to barium enemata and occult blood tests. The patient's history could give valuable information, especially a history of bowel irregularity, abdominal pain, or distension. The clinical examination should be repeated, since on one day the abdomen might be flat and apparently normal, while on another it might be somewhat distended, and possibly palpable peristalsis could be observed. After this repeated examination, occult blood tests might be done. In the barium enema examination there were many fallacies. It was a very fluid enema, and could run through a stricture which might seem impassable from an examination of the specimen. Another fallacy arose from overlapping; a distension above or below the stricture might quite obscure the stricture itself. A negative barium enema finding should never be accepted without question. With regard to cancer of the rectum, practically all such cases could be diagnosed by a combined examination with the finger and the sigmoidoscope. Cancer of the recto-sigmoidal region could not be detected by a barium enema. In the two-stage operations Mr. Gabriel did a preliminary laparotomy and colostomy under a general anæsthetic. At the second operation he gave 5 or 6 c.cm. of avertin, running it into the colon via the upper colostomy opening. The patient fell asleep, and 20 minutes later spinal anæsthesia was induced. The duration of the anæsthesia seemed to be definitely lengthened by the avertin. He had been greatly disappointed with radium, and he related cases of cancer in which radium had failed.

Dr. H. H. MILLS thought that the surgeon's judgment on whether or not an operation ought to be performed deserved as much care from him as the technical part of the operation. His impression, after a considerable experience, was that people over a certain age should be spared surgery if there was not complete obstruction. He spoke of a woman now in her ninety-fifth year, who had had an abdominal mass pressing on her venous and lymphatic system for at least eight years. Both abdomen and legs were greatly distended, she had a large liver, and she passed blood in the motions. Yet despite that she was active and happy. She had never been operated upon, and the decision to spare her surgery seemed to have been a wise one.

GRADING OF NEOPLASMS.

Mr. W. T. WARWICK recalled a patient on whom colostomy had been performed ten years previously for carcinoma of the rectum. With regard to carcinoma of the colon, a decade ago the optimistic surgeon would probably have said that he could cure a large percentage of cases; if he did not succeed, he would lay the blame on the practitioner for having allowed cases to go too far. To-day, however, the private opinion of the surgeon was much more gloomy. Carcinoma of the colon was much more malignant than was usually supposed. At Middlesex Hospital considerable importance was attached to the grading of tumours. The St. Mark's Hospital grading was an anatomical one, depending on spread through the coats of the bowel, and it was excellent so far as it went. Many sections had to be looked at in order to get satisfactory grading. Recently, however, it had been claimed that grading could be done from small portions taken from the edge of the bowel by a punch. Two workers at the Mayo Clinic had grouped 590 cancers, and had found that the percentage of cases in which metastases occurred increased in direct proportion to the grade of malignancy. There were four grades of increasing malignancy. In the first were 103 cases; in the second, 293; in the third, 139; in the fourth, 52. Grades 2 and 3, the intermediate groups, were by far the most common in cancer of the rectum. The percentage of patients who died after a fixed interval rose, in the four grades, as follows: 44, 62, 75, and 86.

Whether it was possible to do anything to help overcome the infection of the growth and to make the secondary operation less hazardous by means of intraperitoneal vaccination was a question which could not yet be answered. Certainly, however, drainage of the bowel and the use of intravenous hypertonic salines and glucose did help considerably to improve the patient's condition. Blood transfusion completed the pre-operative measures. The post-operative measures should include intravenous glucose, or intravenous or subcutaneous water and saline, in order to rest the anastomosis as much as possible. In a large number of cases the cæcostomy worked to a minimal extent after the excision of the growth combined with anastomosis. The bowel should be rested after operation by giving as much fluid as possible intravenously or subcutaneously, and combining it with glucose.

Dr. GERALD SLOT remarked that many patients, in hospital at any rate, gave a history suggestive of neoplasm. Further investigation, for example, barium enemas—which were not always possible—gave only inconclusive results, and the question arose what further means should be taken to make an accurate diagnosis. It had been found that, when only small growths were in the colon, the whole of the under surface of the liver was apt to be studded with even smaller growths. Metastasis in such cases was probably far more prevalent than it was commonly supposed to be. The treatment of inoperable cases with heavy metal salts—cuprase and selenium, for instance—had to be considered. Dr. Slot had seen two cases treated in this way in England, though both died eventually, the treatment afforded considerable relief.

Dr. STEWART WEBB said that a large proportion of intestinal growths were detectable, but too often the technique employed was faulty. Often the enema given was so bulky that the walls were distended. Growths on the right side of the colon were better detected by giving a barium meal.

The CHAIRMAN summarised the discussion. He said that private patients who could not be sent to hospital and could not afford expensive nursing homes were those who were seriously inconvenienced by the expense and the difficulty of securing the more elaborate means of diagnosis. It would be well if the profession could devise means for overcoming this difficulty.

Mr. GORDON TAYLOR, in reply, related a number of cases of malignant disease in which radium or X rays were unavailing, and said it was significant that the authorities in charge of the Radium Clinic in Paris were adverse to the treatment of any kind of carcinoma of the rectum by that means.

ROYAL SOCIETY OF MEDICINE.

SECTION OF NEUROLOGY.

AT a meeting of this Section held on Jan. 8th, the chair being taken by Mr. LESLIE PATON, the President, a paper on the

Ætiology of Disseminated Sclerosis

was read by Dr. E. A. CARMICHAEL. He discussed the evidence for the presence of a virus (*Spherula insularis*) under the four headings of the Lange gold-sol curve, the lævulose-tolerance test, the variation in the pH of cultures, and the microscopic appearance of cultures.

Only undoubted cases of disseminated sclerosis had been examined, he said, and they had been grouped into acute, progressive, and stationary. The gold-sol solution had been made according to the method of Mellanby and Davies, and only samples giving a typical paretic curve with untreated cases of general paralysis had been used. The character of the curve had been found to be in no way associated with the stage of the disease, and in only 31·9 per cent. of the 94 cases had curves of three or over been obtained. Apparently, therefore, the workers at the Westminster Hospital who had obtained 54 per cent. of curves over three might have been using a too sensitive solution.

The lævulose used had contained about 5 per cent. impurity and the estimates had been made by Hagedorn's method. Only 6 out of 28 cases had shown a rise of over 30 mg. in the blood-sugar after the ingestion of 50 g. of lævulose. The workers at the Westminster Hospital had suggested that rises of 70 mg. and over occurred in 70 per cent.; possibly they had used less pure lævulose or else arsenical treatment might have disturbed the liver function.

EXAMINATION OF CULTURES.

Great care had been paid to the pH determinations, which had been performed by the closed cell method with colorimetric methods as confirmation. Corrections had been made for temperature, and the investigator had not known the clinical data or nature of the case until after he had concluded the estimation. The Hartley's broth had been obtained from the same source as that used at the Westminster Hospital and the serum had come from volunteer students of St. Bartholomew's. The proportions of serum, broth, and cerebro-spinal fluid had been those recommended by Miss K. Chevassut. The pH value of serum had been found to differ in various samples, so that the addition of serum to broth in constant proportions would give different pH values to the resulting mixture. Moreover, if the ratio of broth to serum was altered, the pH value of the resulting mixture varied. In order to obtain a mixture with a constant pH value of 7·5 to 7·6 the mixture had been titrated with decinormal acid or alkali, and also a number of untitrated mixtures of various pH values were used. It had been stated in the work from the Westminster Hospital that a mixture of broth and serum kept its pH value of 7·6 over a period of days, or else became slightly acid. It had been found, however, that when fresh serum was used the mixture invariably became alkaline, presumably on account of the loss of carbon dioxide. Cerebro-spinal fluid from a number of cases not suffering from disease of the central nervous system had been added to the broth and serum mixture, and in every case the pH had risen to the alkaline side, reaching a level of eight or more. When the cerebro-spinal fluid had been taken from cases of disseminated sclerosis the same result had been obtained. Thus in 19 cases, of all three types, no confirmation of the shift to the acid side had been obtained. No matter how the mixture of serum and broth had been prepared and no matter what the source of the cerebro-spinal fluid, the resulting mixture had always become more alkaline. An investigation into the quantity of carbon dioxide had shown that the increased alkalinity was due to a very considerable loss of this gas; if it were retained to some extent by culturing under paraffin the shift to the alkaline side had become less evident, and if it were replaced by putting the mixture in a partial pressure of carbon dioxide equal to that of the alveolar air the pH value had moved to the acid side, returning to the alkaline side after exposure to the air. As no precautions had been adopted at the Westminster Hospital to avoid the loss of carbon dioxide it was impossible to explain or to repeat their figures using aerobic methods of cultivation.

The microscopic picture of 19 cultures of disseminated sclerosis fluid differed in no way from the picture of normal fluids or of uninoculated material and no distinctive spherules had been found. His experiments, therefore, Dr. Carmichael concluded, failed to substantiate the work from the Westminster Hospital claiming the presence of a virus in cultures of cerebro-spinal fluid from cases of disseminated sclerosis. Miss Chevassut had been supplied with 32 unlabelled specimens of cerebro-spinal fluid, of which 14 came from cases of disseminated sclerosis and 18 from other sources. She failed to find the spherula in any of the former, but demonstrated it in one of the controls, a fluid from a case of chorea.

The Case for the Virus.

Sir JAMES PURVES-STEWART welcomed criticisms of Miss Chevassut's work, but thought that many of Dr. Carmichael's results which were at variance with hers were due to the use of different methods. The difference in the gold curve seemed more apparent than real. A positive gold curve did not necessarily prove the existence of a living virus. It was probably a mere concomitant phenomenon, the result of some toxin produced by the causal organism. Deficiency of metabolic and antitoxic liver functions indicated a toxic factor, but lævulose-tolerance tests by themselves were of little value as indicating deficiency of liver function unless accompanied by positive indican and glycuronic acid tests in the urine. It was not surprising that the two workers had obtained different pH results, since they had used different types of electrode; the experiments were not comparable. Dr. Carmichael had obtained negative cultures from 19 cases, but Miss Chevassut had examined 410 cases with a high percentage of positive results; Smith and Ransome[1] had secured positive cultures in

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[1] THE LANCET, 1930, ii., 901.

9 out of 11 cases, and Zerkowitz, of Budapest, had secured positive cultures in 26 out of 28 cases. The problem called for further research.

Miss **KATHLEEN CHEVASSUT** said that the gold curve and lævulose-tolerance test had never been claimed as evidence for a virus. She had merely concluded that in disseminated sclerosis there was deficiency in the antitoxic and metabolic functions of the liver and that there was, therefore, probably a toxic factor. In her original paper she had stated that the precipitation of colloidal gold could not possibly be related directly to the presence of a virus, but had suggested that the factor might be some toxin or other product and that this possibility would be further investigated. She criticised Dr. Carmichael's method of preparing a gold solution and said that hers had been prepared by the original method of Lange. He had misunderstood her remarks on the gold curve; the point had been that in disseminated sclerosis precipitation almost invariably occurred first in the fourth tube—i.e., a dilution of 1–80—and that this tube usually showed the maximum precipitation. She had added that in any case the degree of precipitation was usually not greater than that indicated by the figures 3 or 4. Dr. Carmichael suggested that the lævulose might have been impure; it had been the purest obtainable on the market and the same as that used by Dr. Carmichael. A certain number of tests with galactose had confirmed the lævulose-tolerance test, and Dr. A. F. Hurst had further confirmed her results.[3] It was the correlation of three tests—the lævulose-tolerance test, the indican test, and the glycuronic acid test—which had led to the conclusion that the detoxicating power of the liver was deficient.

Experiments dealing with pH values were not proof of a living virus; she could not, therefore, agree that they were of more value than microscopical observations. The obvious fallacy in Dr. Carmichael's work was that he was attempting to measure the reaction of cultures without knowing whether they were cultures or not. Dr. Carmichael had discarded the hydrogen electrode method because it removed easily dissociated carbon dioxide from the mixture; this was the precise reason for which she had adopted it. It was obvious that carbon dioxide was bound to be lost, and the best method had seemed to be one in which this variable factor was removed. Then the experimenter was left with one factor only—viz., any variation in hydrogen-ion concentration induced by something specific in the cultures themselves. A little consideration would show that the prevention of loss of carbon dioxide would defeat the object of making the cultures, since the conditions of growth of an aerobic virus would not be fulfilled. Hartley's broth was a well-buffered medium, and this buffering capacity must be recognised if the experiments were to be understood. By Dr. Carmichael's method the shift to the alkaline side was made inevitable, and this would mask the slight change to the acid side, even if he were dealing with positive cultures, since change of reaction only occurs in an active growing culture. In her early work negative results had been so uniform as to be completely discouraging, and positive results had only been obtained when the somewhat difficult technique had been rendered much more perfect and the microscopic appearance in cultures had been established as the basis for pH experiments. Even in her early work she held the opinion that the occasional change of reaction demonstrable was valueless unless it could be correlated with either a microscopical appearance or some other property inherent in the culture. Dr. Carmichael had examined 19 cultures of disseminated sclerosis but of these only 11 fulfilled the condition laid down in her paper—namely, that the fluid must be cultured immediately after withdrawal.

DISCUSSION.

Dr. **J. H. MARRACK** said that it would be absolutely impossible to wash out all the carbon dioxide in a reasonable time; so long as the pH remained at 7·5 an appreciable amount of the carbon dioxide was free. Therefore experiments with the bubbling hydrogen electrode showed nothing. They did not show the pH of the fluid at the beginning or when all the free carbon dioxide had been washed out, but at some intermediate stage which varied with the conditions of the experiment.

Mr. **J. E. BARNARD** said he had examined eight of Dr. Carmichael's cultures and had failed to find anything unusual. He had seen something in Miss Chevassut's cultures that he had never seen under other circumstances, but she had done a very large number of experiments and he had seen a very small proportion of them.

Mrs. **TOOKEY KERRIDGE** spoke of the great difficulties of working with the hydrogen electrode, and said that Dr. Carmichael's method was the one most likely to give consistent results, because he would tend to lose a certain definite amount of carbon dioxide. Nevertheless, the errors seemed to go the wrong way; the pH would be expected to be more alkaline in Miss Chevassut's method. Dr. Carmichael's results did not suggest at all why Miss Chevassut's results should have shown an acid change.

Dr. **J. G. GREENFIELD** said that undoubted cases of sclerosis sometimes yielded normal cerebro-spinal fluid in the absence of any kind of treatment.

Dr. **CARMICHAEL**, in reply, said he had never met "the germ" that would give a pH reaction of 6·0, as Miss Chevassut had stated, and therefore he could not explain her finding.

Dr. J. **PURDON MARTIN** read a paper on

Chronic Subdural Hæmatoma.

He defined subdural hæmatoma as an encysted collection of blood between the dura and the arachnoid, and showed a specimen removed from a man of 58 who had been well until five weeks before his death, when he had woken up one night with an attack of vomiting. This had continued for several days with intermittent severe frontal headache. Thereafter he had gradually deteriorated mentally and physically. The relatives, when questioned, had said that he had fallen when getting off an omnibus about a year earlier but had not apparently sustained any injury.

These cases were uncommon but hardly rare, said Dr. Martin, and he would refer to six cases, three from his own experience during the last year. The pathology was puzzling; the blood probably came from a small dural vein torn by sudden dislocation of the brain within the cranium. The hæmatoma enlarged gradually, and by the time it caused symptoms usually extended over the frontal or parietal lobe. It was bilateral in about 40 per cent. of cases and some of the blood always remained fluid, probably being defibrinated by the pulsation of the brain. It was enclosed by two fibrous membranes containing numerous blood vessels and blood spaces containing blood from the general circulation, but no doubt contributing at times to the hæmatoma. As it enlarged the brain eventually became compressed or collapsed.

Five-sixths of the cases were men, [illegible] was nearly always a history [illegible] ther causes of vascular degeneration also played a part. The condition was much commoner after 40 and in younger subjects the trauma was considerable, whereas in older men it might be negligible. Alcohol might have a subsidiary place in the causation. The latent period seemed to be shorter the more severe the trauma. The first symptoms were general: drowsiness, mental change and headache, leading gradually to coma. Focal symptoms, if present at all, were late and partial. Ocular signs were common. Diagnosis must be made without a history of trauma. Drowsiness might also be seen in cases of frontal tumour, but was seldom so variable or so rapid in its progress as in subdural hæmatoma. There was no general intracranial pressure, so that lumbar puncture would not reveal any abnormality. Papillœdema, however, had been reported quite frequently, and vomiting was not uncommon. Sensory defects were less common than motor. In about 10 per cent. of cases the urine contained albumin. If the condition was suspected, an exploratory trephining should be done; treatment was an evacuation of the hæmatoma and was usually successful at once. Occasionally the hæmatoma filled up again.

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[3] THE LANCET, 1930, i., 659.

Dr. C. P. **Symonds** spoke of the difficulties of diagnosis and the need for exploratory operation in all suspicious cases. In three of his cases the patients had sought advice as much for the focal signs as for the drowsiness and headache. The ruptured vein was often one of the small vessels running from the brain to the superior longitudinal sinus. In two patients the earliest symptom had been shuffling and dragging of one leg with slow spastic paralysis and slight paralysis of the arm, corresponding with bleeding from such a vein. One of his cases had had flakes of fibrin in the cerebro-spinal fluid.

SECTION OF PSYCHIATRY.

At a meeting of this Section on Jan. 13th, Dr. S. A. **Kinnier Wilson**, the President, took the chair, and Dr. **Alfred Adler** (Vienna) spoke on

The Structure of Neurosis.

The collection of experience, he said, did not make science; it was necessary to find the underlying principles, and these must be proved by logic, common sense, and experience. The first crucial problem was how mind experienced body; the new-born child was not rightly related with his body. The second crucial point was how experience influenced mind. The mind could not automatically develop all that it inherited because of the opposition of the environment. It was impossible to know what was an inherited mental ability, because in every step the child took there was interference—the interference of the mother; every attitude and behaviour of the mother impressed the child differently. It was possible that the child was free to respond as he wished to the impressions of the external world; it was impossible to predict how they would work. It was worth while to encourage good influences, as it was probable that the child would make a better response to good than to bad influences. The child was at the beginning of life, had possibilities that we could not estimate, and an active power in his own way.

Individual psychology, therefore, strongly emphasised the value of education. The idea of education had become less important owing to the stress laid on inheritance. Environmental influences were known to have different results, however much they were standardised, and therefore little credit could be given to a system that considered environment alone. After some time in a given environment a child found a way of life, with a definite direction It was impossible to consider movement without considering the goal; the child must have a goal. Adaptation was a useful word in psychology, and it was true that every individual had to adapt. But beyond each person's adaptation lay a different goal. Every human being was striving to overcome difficulties. Without trusting too much to metaphorical comparisons, this striving could be understood from a consideration of bodily development, which was also striving for a final form. This was the view that individual psychology had introduced under the term "finalism." Movement could only be understood by an understanding of the goal. The child, with his active power, built up form—a style of life—and this style was the creation of each child. Because each child created, we could not rely on a system which depended on causes and effects. The child was in the realm of uncertainty and guesswork, and in the many variations seen on each point the psychologist must look for individual development, and therefore individual psychology. The child's goal was how to conquer, how to become superior, to strive for completion, to adapt. After four or five years he had found this goal, had a certain prototype, a scheme of perception, an individual perspective, a certain degree of social interest towards others, and a certain degree of courage. He performed his tasks in his own way, assimilated with his own organs, digested with his own ability, and effected in his own way. No two individuals were identical in their conceptions, their perceptions, their feelings, their actions, or their thoughts; each of these belonged to the style of life created by the child.

THE NEED FOR SOCIAL INTEREST AND COÖPERATION.

Human beings were social beings; everybody knew this, but there were great differences in the expression of the knowledge. Social interest was the key of the psyche and of psychology. This could be understood from many points of view, perhaps the most convincing being that social interest was involved in every activity of life; the child had to coöperate with the mother from its birth. There must be somebody with whom he coöperated. All psychological functions were important from the point of view of this coöperation. The child, coöperating by means of his eyes, perceived and understood the world much better. In all life's failures the right degree of coöperation, of social interest was lacking. It was not a personal matter; all social failures had a private intelligence. To understand properly meant to have been told by the whole of experience that this was the way others would understand. The child thus brought up wanted to coöperate, and did not seek the pleasure principle alone. This ability to coöperate, this social interest, could and must be taught; of course there was an hereditary ability to develop it, but not a very deep one. It must be taught like history or geography. All the problems of life would need it, from the kindergarten onwards. The child not properly trained had a dark, uneasy feeling that he could not solve his problems, and behaved like a spoiled child that wanted to exclude everybody, like a man who could not pay.

TENSION PRODUCING SYMPTOMS.

Therefore a tension arose and vibrations spread all through the body; these appeared most at "weak spots" and caused diagnostic symptoms—a functional neurosis. His suffering spoke; it was a dialect of the organs. Often the organs affected had some inherited or familial abnormality and often the endocrine function was altered. Fear might be shown by erection of hairs, disturbances of the bladder, quickened breathing, palpitation of the heart, or irritation of the sexual organs; but in each case there was a meaning to the symptoms. The patient in fear or tension excluded things from his life, but always suffered this tension, this striving for superiority, and so in social life began to use his symptoms. In practice there was no distinction between thought, feeling, and action, and the tension might arouse primarily thoughts or primarily feelings. The psychiatrist must always find the whole line leading to action, and understand how the patient had created a new way in which he could be adapted and could express his inferiority complex while finding a superiority. He was no better adapted socially, but he no longer felt himself falling down. In the structure of every neurosis would be found an attempt to become dependent on another and to make that other dependent on him. He had to prove that he must take this way, though he would prefer the normal way; hence the inevitable phrase of the neurotic: "Yes—but—." The neurosis could be traced back towards mistakes of the mother, perhaps, who had taught the child to build up his life in a dependent manner. All the social failures showed this lack of social interest and fear of coöperation. Confronted with the need for coöperation they felt as if they stood before an abyss Therefore, these people must never be pushed; they did not seek their solution as normal men but with a conviction of failure.

Neurotics had a peculiar degree of social interest; they did not want directly to hurt other persons but to make them dependent. Invariably they had been pampered dependent children, but this history did not appear until they were tested. Every case-history should, therefore, describe the situation in which the symptom had appeared. Love and marriage, for instance, immediately tested the individual's ability to coöperate, to build up a new future, and care for the partner. All neurotics were sensitive, because they were living in a world to which they were not adapted, and they always felt enmity. This sensitiveness was also found among problem children, suicides, and criminals. All failures, too, were always impatient; they had not the self-confidence to wait. Nevertheless, each neurotic differed from all others; each had created a masterpiece of art. Each expressed himself in an individual style of life and reacted in the same way throughout his life. This agreement in the whole life-style could be used for treatment, and also for prevention. If parents could be taught to prevent, that would be the best way, but those who needed it the most never saw the psychiatrist. Prevention could, however, be started at school, if the teachers looked out for faulty styles of life and shrinking from social interest. When the patient was adult, treatment lay in convincing him of his lack of coöperation, training him to coöperate first with the doctor, who replaced the mother, and then with others.

DISCUSSION.

Dr. R. L. WORRALL asked what was to be said to the suicide or criminal who ascribed his act to poverty.

Dr. ADLER replied that this could not be the real reason, for many poor people did not commit crime. These people lacked energy to attack someone else but suicide was a form of attack, of revenge. The whole style of life must be changed. The formula of the neurotic was "Yes, but—"; of the criminal "No"; the latter did not want to go the normal way. The neurotic could not form a gang; there could not be a society of persons suffering from anxiety, but the criminal had enough social interest to join others of his own way of life.

Dr. PARKES WEBER compared Dr. Adler's teaching to the old saying "know thyself." Everybody ought to recognise their inferiorities and be contented with those they could not remedy. He thought the English system of boys' education last century had done much to obviate the results of inferiority; public school boys had been taught to find their level. He asked what happened when a man could not react normally because of some purely physical disability—e.g., epidemic encephalitis, which he thought was as well explained by the theory of inferiority as by any other, the organ affected being the organ of the mind.

Dr. E. B. STRAUSS asked which of Kretschmer's two types was the normal temperament.—Dr. ADLER pointed out that there were mixtures and geniuses and failures of both types; it depended in each type on the amount of social interest preserved. —Dr. A. F. DOBBIE-BATEMAN asked at what stage the semi-sanity of all of us became neurosis.—Dr. ADLER replied that no general rules could be laid down; all individuals differed, but the degree of social interest was the best guide to the amount of neurosis.

SECTION OF OPHTHALMOLOGY.

AT a meeting of this Section on Jan. 9th, with Mr. ELMORE BREWERTON, the President, in the chair, a paper on

Cataract from Exposure to X Rays

was read by Mr. R. FOSTER MOORE. It concerned a patient in whom cataract was produced by exposure of the eyes to heavy doses of X rays during the treatment of sycosis on the face.

He was a man aged 28, and was seen by dermatologists because of severe sycosis of scalp, face, and neck, of three years' duration during which he had been to several hospitals, the treatment having included X rays, which the patient said made him worse. In this last treatment, because of certain risks attending X ray treatment, a signed statement was obtained from the man expressing his willingness to have the treatment. The disease affected the eyelashes as well as other parts of the face. The treatment lasted from February to June, 1927, and the total given was 12 Sabouraud doses. It completely cured the sycosis, and there had been no recurrence, but telangiectases gradually appeared, and had remained, apparently unchanged, until the present time.

In November, 1929, his sight began to fail, his acuity in March of that year being 6/12 in each eye; but since Christmas of that year he had been unable to read a book. In June, 1930, when Mr. Foster Moore saw him, the vision was only 6/60 in each eye, and there was a plaque-like opacity in the posterior cortex of each lens, while bordering this was a powdery opacity. The fundi were normal.

Last May Mr. Moore needled the right cataract, and in October Mr. J. G. Milner needled the other. The progress was uneventful, and after capsulotomy the acuity in the right was 6/6; absorption of the left was not yet complete, but was running a normal course. Most of the opacity was in the lens substance, adjacent to the posterior capsule.

The first case of this kind reported, said Mr. Moore, was in 1909 by Mr. Leslie Paton. In all recorded instances the dose of X rays had been heavy, and efficient protection of the eyes had not been possible. He commented on the length of time which elapsed between the exposures and the affection of the lens, two and a half years in the present case. He thought that, even when the eyelids needed treatment, a nicely adjusted shield would give the eye the necessary protection.

REVIEWS AND NOTICES OF BOOKS

Burns: Types, Pathology and Management.

By GEORGE T. PACK, B.S., M.D., Fellow of the Memorial Hospital, New York City; and A. HOBSON DAVIS, B.S., M.D. London: J. B. Lippincott Company. 1930. Pp. 364. 25s.

THE advent of tannic acid technique has doubtless stimulated much of the interest shown in America in recent years in the pathology and treatment of burns. Whether or not this new form of local treatment is epoch-making, as this and other transatlantic volumes declare, remains to be proved. A comprehensive and up-to-date survey of the subject is here presented in three sections; the facts about burns, the management of burns, and burns by specific agents. Chapters on the blood and urine changes, the complications, and on burns due to electricity, sun, radium, and war gases are particularly valuable. The numerous theories of the pathology and the equally numerous forms of treatment are all detailed; though the impartiality shown is praiseworthy, the book would have been more interesting if the authors had indicated their own preferences. But the insistence on the importance of primary shock, which has been belittled by some as a common cause of death, and on the necessity for the administration of fluids in toxæmia, a matter too often neglected, show that they are alive to the essentials; their views are basically sound, and this outweighs a lack of guidance among the multitudinous forms of local treatment. The sections upon care of the burn with a view to the prevention and limitation of deformity are admirable. A comprehensive bibliography follows each chapter.

Physiotherapy: Its Principles and Practice.

By F. HOWARD HUMPHRIS, M.D. Brux., M.R.C.S. Eng., D.M.R. & E. Camb., Hon. Consultant X Ray Physician to Christ's Hospital; and R. E. STUART-WEBB, M.B., M.R.C.S. With contributions by FRANK ROMER, M.R.C.S., A. E. HAYWARD PINCH, F.R.C.S., M.R.C.P., and A. GORDON WATSON, M.D. London: Jonathan Cape. 1930. Pp. 384. 15s.

ALL the important branches of physical medicine are considered in this book. The major portion, comprising about one-half of the volume, deals with the *principles* of electrotherapy, radiant heat, phototherapy, ultra-violet ray therapy, X ray therapy, radium therapy, massage and manipulation, spa treatment, and certain miscellaneous therapeutic agents—viz., melted wax, foam, carbon dioxide snow, and mechanical vibration. The sections on radium therapy, massage and manipulation, and spa treatment are by Mr. Hayward Pinch, Mr. Frank Romer, and Dr. A. Gordon Watson, respectively. The treatment of various diseases by physical methods is dealt with in a second part of the book, which comprises rather less than one-half. In this part the diseases of the different system of the body that are suitable for physical treatment are considered, and the authors describe the form, or forms, of treatment which they consider most suitable. This part is followed by a 34-page glossary of physical and medico-physical terms, and a short index.

In a book of this size it is manifestly impossible to devote to each branch of physical medicine the attention which its importance deserves. This applies more particularly to that part of the book dealing with *principles*, where 76 pages are devoted to electrotherapy and only eight to X ray therapy. It is likely, however, that there are many general practitioners of medicine who desire to acquire some information on the nature of radium therapy, mechanotherapy, hydrotherapy, and other forms of physical treatment without reading the text-books dealing with the subjects separately. A perusal of these text-books shows that there is considerable overlapping of the therapeutic fields of different forms of physical treatment, and the reader is left in doubt as to the treatment which he should prescribe. The authors of the present volume select and recommend the treatment which they consider the best. It is to be noted that electrical currents are most often prescribed, particularly those derived from the static machine. Dr. Humphris is a well-known exponent of the value of treatment by static electricity. Considerable importance is attached to the red and infra-red rays. It is said that the latter have a relatively high power of penetration, and that those which pass through water will pass through 3 cm. of body tissue before being absorbed. The meaning of the statement that "human heat may be said to be the absorption of infra-red rays in the body" is not quite clear. A description is given of a method devised by Dr. C. A. Robinson for subjecting the male urethra to diathermy in cases of gonorrhœa. It is not stated, however, that Dr. Robinson never attributed any value to diathermy in the treatment of gonococcal urethritis in men, and there is no reference to his work when the treatment of salpingitis is described. The results of his pioneer investigations on the use of diathermy in salpingitis were communicated to the Section of Electrotherapeutics of the Royal Society of Medicine over two years ago. There is no mention of his work on the treatment of pneumonia by diathermy in the pages dealing with that subject although by far the largest amount of work yet done in this country has been conducted by him.

The general practitioner will find much of interest in this book and some useful information will be gained in regard to the selection of forms of physical treatment for different diseases. It is written in an easy and colloquial style, and there are amusin passages. Writing on the treatment of overstraine voice by means of the "high-frequency vacuu current from the static machine," it is said that "th treatment has proved to be of great benefit to all sor and conditions of men and women, from opera singe to political speakers and politicians of all parties."

Téléradiographie Stéréoradiographie.

By L. DIOCLES, Chef du Laboratoire de radiologi de la Clinique médicale de l'Hôtel-Dieu. Paris Masson et Cie. 1930. Pp. 215. Fr.30.

IN this book M. Diocles gives an historical survey and a very detailed account of the principles of stereoscopy, and makes a strong plea for the extended use of stereoscopic radiography and telestereoscopy. He claims great advantages for this method, and maintains that the only reason for its neglect is the report of disappointing results which were due to faulty technique. He describes his own technique in detail and recommends stereoscopic radiography for all parts of the body. If some of his claims for the method seem rather too enthusiastic, he supplies much interesting information on stereoscopic work, including chapters on making reduced stereoscopic prints and stereoscopic projection. The book will be useful, because it contains much collected information which it would be difficult to find from other sources.

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veen Miss Chevassut's and Dr. Carmichael's
ults. As Sir James Purves-Stewart pointed out,
ey were using different methods of determining
ıe reaction of their mixtures and therefore their
esults are not comparable. Dr. Carmichael
abandoned Miss Chevassut's method because he
found that it led to frothing of the mixture. Miss Chevassut in reply said that she took precautions to prevent frothing. It is possible that the bubbling hydrogen electrode in Miss Chevassut's hands *yielded more constant results than in* Dr. Carmichael's. Dr. J. R. Marrack condemned it as unreliable, but Mrs. Tookey Kerridge pointed out that the tendency of this instrument would be to render the mixture more alkaline, whereas Miss Chevassut's positive results consisted of a change to the acid side and were therefore inexplicable merely as products of faulty technique. It seems impossible to judge from verbal discussion the relative merits of the two techniques, for much may depend upon the precise way in which a worker carries out an operation. We cannot at present rule out the possibility that the difference between *Miss Chevassut's and Dr. Carmichael's results may* be due to differences of method. It is unfortunate that Dr. Carmichael did not persevere with Miss Chevassut's method as well as with his own in order to ascertain the results yielded by the two methods on the same material in the hands of one observer.

Dr. Carmichael failed equally to confirm Miss Chevassut's findings of the *Spherula insularis* in *cultures of the cerebro-spinal fluid from 19 cases of* disseminated sclerosis. Sir James Purves-Stewart in reply pointed out that since Miss Chevassut's original paper was published she had examined 234 more specimens with positive results in 89 per cent., and that Smith and Ransome had been successful 9 times out of 11 and a worker in Budapest 26 times out of 28. We thus encounter a further discrepancy of *which no one present at* the meeting offered any explanation. Dr. Carmichael finally explained that Miss Chevassut had been supplied with 32 unlabelled specimens of cerebro-spinal fluid; 14 of these came from cases of disseminated sclerosis, and she failed to demonstrate the spherula in any of them; she found it, however, in one of the control specimens which came from a case of chorea. *This may be a crucial test, for on* her own showing it should be possible to detect the fluid from a case of disseminated sclerosis by the presence of the spherula 9 times out of 10. It may be suggested that in the past the conditions of the test have been unsatisfactory. It is of

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urgent importance that Miss Chevassut should accept Dr. Carmichael's invitation, more than once repeated, to carry out these tests under her own conditions at the National Hospital. It is highly unsatisfactory that three years after Sir James Purves-Stewart began to treat patients with vaccines of the *Spherula insularis,* and ten months after the discovery of the organism was announced, this simple issue should still be undetermined. Also it would seem an elementary step in the investigation of a supposed organism that living cultures should be supplied to the investigator for examination. That such an obvious course has not been taken calls for explanation. The responsibility of those who claim to make discoveries in medicine extends beyond the therapeutic applications of their work. They owe it to society to court refutation by putting all their resources at the disposal of their critics.

In conclusion, we must reiterate our opinion, first expressed last March, that the bodies described by Miss *Chevassut, even if we concede their* characteristics to the full extent claimed by her, have not yet been demonstrated to be the cause of disseminated sclerosis. In Dr. HANS ZINSSER'S[2] words, "We believe that the only possible way of being sure at the present time that a filtrable virus is present in supposed cultures is demonstrable virulence, and that to assume that any ultramicroscopic appearances in hypothetical cultures are the virus and then base immunological or therapeutic conclusions on the presence or absence of these appearances is merely creating a circle of reasoning that brings us no nearer solutions."

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PROFESSIONAL DISCIPLINE IN PANEL PRACTICE.

TWENTY years ago this country adopted a system of national health insurance which took for granted the coöperation of the general practitioner. He undertook his share in the new national medical service not without certain misgivings, and it would be idle to pretend that time and experience have persuaded him that the system is now perfect. We are not here concerned with the political principles or prejudices which may emerge in a discussion of social services progressively provided by the State. Nor are we now considering the limitations upon medical treatment and clinical efficiency under the Act. We desire simply to refer to certain disabilities of professional control to which the general practitioner is exposed in health insurance work as contrasted with private practice. This is one of the points taken in the valuably constructive proceedings and report lately published by the National Health Insurance Acts Section of the Paddington Medical Society. Some of the recommendations from that report are set out on p. 166.

The medical practitioner has to comply with two standards—namely, that of the general law of the land and that of the rules of conduct peculiar to his profession. Failure in the latter respect may be hardly less serious for him than breach of the general law. Service under the national health insurance system sets him yet a third standard, a standard of skill, application, and conduct which is different from—and tends to be higher than—the standard applicable to the non-panel practitioner. Not only is this standard different, but it is differently enforced. General jurisdiction over medical practitioners is wisely entrusted to the General Medical Council under an arrangement with which the public, the law-courts, and the medical profession itself are substantially content. The special jurisdiction over the panel practitioner, on the other hand, is partly popular and partly departmental. The insured patient, reasonable enough in most cases, is sometimes ignorant, captious, and exacting. When he makes a complaint he is in a privileged position. The insurance committees which handle these complaints may contain a quite inadequate proportion of professional members. The rules to be applied—for instance the basis on which excessive prescribing is calculated —are sometimes wooden and stupid. Finally, the Minister's ultimate decision, vital to the practitioner, cannot fail to appear arbitrary so long as no appeal to the law-courts is permitted, though the actions of the Ministry have always been taken with full sympathy for the profession as a whole. Since both panel practitioner and panel patient would prefer that their relationship should more closely approximate to that which obtains in private practice, one simple reform would be to remove the special disciplinary control to which the panel doctor is subjected. Allegations of improper certification are often made against the pane doctor. This is an issue with which the Genera Medical Council has always dealt in controlling general practice; why should it not deal with th same issue when the complaint arises in pane practice?

But the General Medical Council cannot be th recipients of all and every allegation against pane practitioners, nor are the decisions of that bod more open to appeal than those of the Ministe of Health. The difficulties implied by the intro duction of the law-courts in defence of aggrieve practitioners is obvious, but this may be eventuall found the only course to ensure justice.

◆

RADIUM AND RESEARCH.

THE present position of radium therapy has been reached by processes typical of this country. I is the individual effort, which by its persistence brings into play the collective effort, that accounts for the widespread recognition of radium as a therapeutic agent. A few there were who, before the war, recognised that radium was of value in medicine, but the measure of its value could only be taken by people getting to work on it. The Medical Research Council were well aware of this situation when they started about 10 years ago their scheme of research into the medical uses of radium, really its use in cancer. A retrospect of this research, obtained by studying the Council's annual radium reports, leaves the reader in no doubt about the value of radium in the treatment of several varieties of cancer; it will also give him a good idea of the development of technique over this period. These reports have led to the recognition by almost every medical faculty in the country of the value of radium therapy as we now know it. But there are good reasons for believing that the scope of this therapy will be widened in the future. In the first place the country may be said to be fairly well off in its supplies. About two years ago the Committee of Civil Research, which went into the matter carefully, showed how badly supplies were needed everywhere, London being relatively the best off. Since then King Edward's Hospital Fund has distributed nearly 10 grammes of radium among twenty-four London hospitals (see p. 159) and something similar has been done for the country at large by the Radium Commission. Up to the end of the year just completed a total of over 20 grammes of radium has been delivered by the Radium Belge to the Commission, and has been tested by the National Physical Laboratory; 15 grammes of this have been sent to the various National Radium Centres and are in full clinical use there.

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[2] Zinsser, H.: Jour. Nerv. and Ment. Dis., 1930, lxxii., 655.

The cause of research in this subject has been helped by the governing bodies of individual institutions, by the Medical Research Council, and by grants in aid from the British Empire Cancer Campaign. The four big organisations named represent an enormous degree of support for the advancement, not merely of radium therapy, but of radiology generally; but if we are honest we must admit that in one respect we are not in a position to take full advantage of the potential help that here exists. In spite of the widespread medical uses of X rays and radium, the fact remains that there are few radiological laboratories in the country where research on the medical uses of these agents can be carried out. Opportunities and inducements for those wishing to do this kind of research are extremely limited. On the radiological side the lines of research being opened out are, broadly speaking, physical and biological, and their pursuit can best be undertaken in a radiological laboratory with suitably chosen personnel. It is not too much to hope that in the near future hospitals and other similar institutions will provide facilities of this kind. There is still an uncomfortable amount of truth in the gibe that the whole of radiology in its radiotherapeutic aspect lacks scientific basis and rests largely on an empirical footing. Perhaps it would be true to say that, although the selective action of these rays is a duly accredited scientific fact, the essential action of the rays on living forms is still a matter of conjecture. To admit this is to see the need for more research on such fundamental matters, and it may well be that the physiologist and biologist are just as likely to make contributions to such an issue as is the pathologist. There are dangers in widening, just as there are in narrowing, the scope of research; but it can hardly be doubted that for the development of radiology safety lies in the wider view. Far more knowledge is needed of the ways in which radium and X rays can affect the vital processes of the normal body before their effect on pathological processes can be rightly conjectured or rationally interpreted; such knowledge will come by the combined efforts of biologist and physicist. One of the happiest omens for this development, be it in the clinic or in the laboratory, is the mutually helpful attitude, recently expressed in several notable actions, of the four supporting bodies to which reference has been made.

PARLIAMENTARY REPRESENTATION OF THE UNIVERSITIES.

EVERY alteration in our national suffrage, as it has been made, has been designed or presumed to mark constitutional progress, in that the extension or limitation of the right to vote will dissipate an undue influence of wealthy or privileged persons. A measure to be introduced at the reassembling of Parliament would abolish the representation of the Universities, and will make its appeal to those who are particularly anxious to free parliamentary representation from the reproaches of class distinction and plural voting. It may be well to point out that the maintenance of the parliamentary representation of the Universities need imply no such abuses, while there are sound popular reasons for leaving the position of the Universities as it now stands. At any rate, an inquiry into the facts by a committee appointed to oppose this measure has resulted in a memorandum in which the situation is described as being quite different from that which it is generally believed to be. At the General Election in 1929 seven University constituencies returned 12 members with about 200,000 voters, but owing to extensions of franchise, created by the University constituencies themselves, these numbers will automatically and quickly increase, while the increase will be due mainly to the recruiting by the Universities of students from the secondary schools. In other words, so far as any plural voting is made possible by the University representation, it will not be a privilege enjoyed by the wealthier classes, but a recognition of an additional vote to men and women who have successfully passed through a course of higher education. But the word "additional" must be qualified by the fact that the University constituencies by reason of their make-up provide for the franchise of a large number of men and women who would otherwise be without a vote at all: it is not a question of plural voting in many cases, but rather of removing disenfranchisement. For the University voter can vote by post or by proxy, when he or she cannot by reason of avocation register a personal vote. Probably the vote for the University is the only one which many doctors are able to record.

THE MERSEYSIDE VOLUNTARY HOSPITALS.—The total expenditure of the Merseyside Voluntary Hospitals in 1929 was £322,001 and in addition £3288 for convalescent treatment and after-care. The total income from all sources (excluding legacies) was £268,753. The number of in-patients treated was 55,160 and of out-patients 203,148. The number of patients sent to convalescent homes was 1228. The penny-in-the-pound fund has 250,000 enrolled contributors, but the contributions fall short by £40,000 of the sum required for the maintenance of the contributors to it and their dependants, who together number about 750,000 persons. It costs about £50,000 a year to maintain them in the hospitals. Part of the sum thus required is obtained from the Hospital Sunday collections.

ANNOTATIONS

DIET IN DIABETES.

THE question of the most suitable diet in diabetes mellitus is a very difficult one. Since Allen's work in 1914 the proper amount of protein has been almost settled at about 1 g. per kg. of body-weight; (0·5 g. per lb.); but amounts of carbohydrate and fat vary widely. Before the discovery of insulin the carbohydrate was kept as low as possible, and some patients existed on 10 to 20 g. per day. The fat, on the other hand, varied from 100 to 200 g. or more. Even when insulin made it possible to increase the carbohydrate to 40 or 50 g. the fat intake was still kept very high by certain workers. During the last seven years the tendency has been to increase the carbohydrate to 60 or 80 or 100 g. in the day, and lately a plea has been put forward for complete reversal of the proportions of carbohydrate and fat.[1] Where a diet of 50 C., 70 P., and 250 F. (2817 calories) was sometimes given, the new diet would consist of 250 C., 70 P., 50 F., (1777 calories). At first sight it seems probable that so large an amount of carbohydrate will necessitate a great increase in the insulin dosage. Thus an increase of 200 g. of carbohydrate might be expected to call for 100 units of insulin. But McLeod and his co-workers showed in 1924 that the rule that 1 unit of insulin looks after 2 g. of carbohydrate is only correct when small quantities of carbohydrate are being given, and for large amounts of carbohydrate 1 unit may suffice for 4 g. Experience indicates that the extra insulin required to keep the blood-sugar normal on these large carbohydrate diets is often less than 1 unit for 4 g. and can subsequently be reduced still further. Although the diet at first sight seems large, its caloric value is really on the low side, and the principle of under-nutrition put forward by Allen is maintained. The clinical condition of patients so treated is described as very satisfactory, but one of the difficulties of deciding about the correct diet is that, since the introduction of insulin, patients look and feel well, no matter what they are eating. An observation on which Rabinowitsch lays emphasis is the decrease in the blood cholesterol. This may be as high as 1000 mg. on a high fat diet, but on a low fat diet is usually within normal limits, and may fall to 100 mg. One great advantage of the increase of carbohydrate is that the various substitutes for bread—whether the cheap variety of bran and gelatin or the expensive diabetic foods—are unnecessary and are no longer desired by the patients. On the other hand, a diet which contains so very little fat is somewhat unpalatable. In order to reduce the fat to 50 g. in the day the patient is required to abstain from all bacon, ham, or other fatty meats and cream, and to eat only 1 oz. of butter daily. These articles of food have been esteemed by diabetics and the deprivation therefore seems severe. Although the evidence in favour of the high carbohydrate and low fat diet shows that the patients keep well and require much less insulin, no evidence has been provided that they do better than on a diet which contains rather more fat and rather less carbohydrate. It may well be that the best diet is somewhere between the two extremes, but some years must elapse before this can be proved. Meanwhile the present changes constitute an advance, for the patient with diabetes need no longer make himself conspicuous by avoiding foods which contain carbohydrate.

NEW WORK ON FILARIASIS.

ABOUT three years ago Colonel S. L. Brug found in the blood of man in the Dutch East Indies a sheathed nocturnal microfilaria which when stained with hæmatoxylin differed from *Mf. bancrofti* in the shape and nucleation of the tail and in the clarity of the anal pore; moreover, *Culex fatigans* resisted infection by it. He regarded it as a new species, and named it *Mf. malayi*. At a meeting of the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine on Jan. 6th Dr. Brug explained the present position in a valuable paper which was followed by an informative discussion. The intermediate or larval host of *Mf. malayi* has hitherto escaped detection; but Dr. Brug now reported that ready development occurred in two species of tænio-rhynchus. Of *T.* (*Mansonioides*) *annulipes* used by him 93 per cent. became experimentally infected, and of *T.* (*M.*) *annulatus* 83 per cent.; in wild specimens caught in houses the similar percentages were 1·2 and 1·9. Development proceeds on lines very similar to those of *F. bancrofti* except that a caudal bunch of nuclei is formed, and a curious nail-shaped structure at the anus. Infection seems to cause a heavy mosquito mortality, an observation paralleled by that of P. H. Manson-Bahr on the non-periodical microfilaria of Fiji. It may be noted that the breeding-places of these mansonioides have hitherto eluded detection.

On the clinical side Dr. Brug found that infectio with *Mf. malayi* was apt to be accompanied b elephantiases of the legs, and that with *Mf. bancrof* by hydrocele; moreover, contrary to the ordinar experience with infection by the latter, in whic infection microfilariæ are apt to disappear whe elephantiasis comes on, *Mf. malayi* was frequentl present in elephantiasis cases. This associatio between elephantiasis and *Mf. malayi* induce reference to the observation of V. T. Korke[1] tha atypical forms of *Mf. bancrofti*—forms which Kork likened to *Mf. malayi*—were associated with elephan tiasis, and the typical ones with hydrocele; a remar which drew from Dr. Brug the opinion that Kork had seen *Mf. malayi*, thus implying a belief tha the newly separated form was widespread. In n case had Dr. Brug been able to obtain a post-morte examination, so that no adult forms had bee examined; their characters are accordingly unknow In view of the commonness of filariasis it is surprisin how few adult worms have ever been found an examined; these new observations are likely to alte this unfortunate position, and the search will n doubt take into consideration the findings o O'Connor and his colleagues[2] that the adult worm do not necessarily or perhaps mainly lie in the larg lymphatics but are scattered or aligned in the limbs As to the separation of elephantiasis and hydrocel on the ground that they are apt to be caused b different species of filaria, it is well to recall tha H. W. Acton and S. Sundar Rao,[3] whose observation included Orissa, explained the different incidence these manifestations which they found in different parts of India as being due to difference in the amount of infection which was being acquired. They inferred that in hyperendemic regions the first glands reached were severely damaged, resulting in elephantiasis usually of the leg, while in regions of low endemicity the main damage was in the juxta-aortic series with consequent hydrocele, chylocele, and lymph varix of the cord. These writers mentioned no difference in the morphology of the microfilariæ as being associated with the differing lesions. Moreover, Dr. Brug reported that, in villages where both kinds of microfilariæ were found, mixed infections occurred oftener than the laws of probability would suggest, which seems to imply that all factors are not yet known. It is only by their discovery that divergent views will be reconciled.

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[1] See, for instance, Joslin, E. P., A Diabetic Manual, 4th ed. Philadelphia (reviewed in THE LANCET, 1930, i., 1350); Rabinowitsch, I. M., Canad. Med. Assoc. Jour., 1930, xxiii., 489.

[1] Indian Jour. Med. Res., 1929, xvi., 1023.

[2] See THE LANCET, 1930, ii., 409.

[3] Indian Med. Gaz., 1930, lxv., 620.

For many years nocturnal filariasis has been considered as a field with little scope for further morphological discovery. These helminthological observations by one who has made his mark in work on spirochætes, protozoa, and insects, and who modestly refused at the meeting to be considered as an expert on helminthology, shows what plentiful scope there still is for that individuality and wide view characteristic of Patrick Manson. Team-work is spectacular in the volume of its output, but here is yet another instance that it is no necessary prerequisite for the output of valuable, stimulating, and original work.

INTRAVENOUS ANTISEPTICS FOR UTERINE INFECTION.

THE treatment of puerperal sepsis and uterine infections is generally considered to be purely local so far as antiseptics are concerned. At a recent discussion in Dublin Dr. R. J. Rowlette definitely said[1] that in no condition of bacterial infection was there any reason to suppose that antiseptics introduced into the blood stream had any value, and that the only useful systemic method was vaccine or serum. This statement may be considered unduly pessimistic in the light of recent work of Dr. Joseph L. Meyer[2] at the Northwestern University Medical School. He records the results of a number of experiments on dogs. The abdomen was opened and both uterine horns were ligated with double silk ligatures near the body and at the fimbriated end, to prevent discharge of pus into the vagina or the abdominal cavity. A bacterial culture (1 c.cm.) of staphylococci, streptococci, or colon bacilli obtained from patients was introduced by a syringe into the left horn just below the fimbrial ligature. The needle was passed diagonally through the musculature and then parallel with the mucosa before entering the lumen. This made a valve-like opening which prevented leakage in most places. Acriflavine, 1 c.cm. of a 1 per cent. aqueous solution per 10 pounds of body-weight, was injected either immediately or 24 hours or 48 hours after the operation. This dose is about one-half to one-quarter of the amount generally used in therapeutics.

The results were quite striking when the dye was injected immediately after inoculation, but of course the experiments were not applicable to human pathology, as the practitioner is not aware of infection until symptoms appear. Temperature records showed that symptoms were present 24 hours after inoculation, and even when the treatment was instituted at this time it had a distinctly beneficial effect. The average temperature of the treated animals was definitely lower and dropped by lysis. When acriflavine was injected 48 hours after inoculation there was also a beneficial effect, though a less marked one. These experiments are comparable with the conditions of practice, except that the number of organisms introduced was probably greater than would occur in an ordinary puerperal infection. After 24 hours there is a rise in temperature and the mucous membrane of the uterus is deep red and swollen. The control animals showed a remarkable difference in pathological conditions from the treated animals; the uteri of the former were more than twice the size of those of the treated group, and intensely swollen and engorged. In some cases sterile cultures were obtained from an infected horn after acriflavine treatment. According to Dr. Meyer's results intravenous acriflavine in appropriate doses would be worth trial in early cases of uterine infection.

MALARIAL TREATMENT OF GENERAL PARALYSIS.

FEW therapeutic innovations have been so hotly discussed as the non-specific treatment of general paralysis, and a recent survey by Prof. Wagner-Jauregg, the pioneer of this method and the exponent of malarial treatment in particular, is therefore of special interest.[1] The danger of malarial treatment, he says, is a thing of the past. The intracutaneous injection of malarial blood reduces the incidence of the severe quotidian type of fever, and the likelihood of inducing the desired tertian type is still further increased if the blood belongs to an incompatible group. The attacks can be stopped with quinine or plasmoquine—though this latter drug establishes tolerance in the parasite—and the course can, if the patient seems to lack stamina, be given in two parts, separated by specific treatment and re-education. The range of contra-indications has therefore been greatly reduced and age is no longer a bar to treatment. The efficacy of the method can, of course, only be judged by the increase it produces in the number of remissions. Rear-Admiral Meagher's figures, taken from English mental hospitals,[2] which Prof. Wagner-Jauregg quoted, are certainly impressive but, as the Viennese worker points out in another connexion, it is not scientifically accurate to match results from one group of hospitals against results from another. Nevertheless, as evidence of the permanence of the remissions, he adduces three patients who were discharged after treatment in 1917, of whom two are still well and the other has died, free from paralysis, in 1928 of an intercurrent complaint. Moreover, Dr. Dattner's results from the Vienna Psychiatric Clinic, which Prof. Wagner-Jauregg describes as unique in their scope and accuracy, show that out of a total of 129 patients treated between 1922 and the beginning of 1924, 53 are still enjoying full remission and capable of following their occupations. But for unconnected intercurrent disease the number would, he says, be 57. According to Dr. Dattner, the reaction of the cerebrospinal fluid becomes negative or weak positive in many of even the unbenefited cases. Prof. Wagner-Jauregg quotes the observations of Sträussler and Koskinas that the brains of paralytics who had died during treatment showed an unusual increase in the inflammatory and proliferative processes, and states that those who die some time after the treatment show considerable retrogression of the inflammatory symptoms. Unfortunately, the number of patients in full remission coming to necropsy through intercurrent disease is very small, but the finding of Sträussler in one case is certainly interesting: that paralysis could not have been diagnosed on anatomical grounds without knowledge of the history. Prof. Wagner-Jauregg is, however, perhaps a little optimistic in his belief in the possibility that injected malaria may produce a pathological cure. He points out that the behaviour of the spirochætes in treated patients has not yet been pathologically investigated, but that, according to the best authorities, they probably vanish from the nervous system of patients in full and long-standing remission.

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[1] THE LANCET, Jan. 10th, p. 77.

[2] Amer. Jour. Obstet. and Gyn., 1930, xx., 760.

[1] Münch. med. Woch., Jan. 2nd, 1931, p. 4.

[2] See THE LANCET, 1929, ii., 402, 671.

Prof. Wagner-Jauregg reviews the other methods of non-specific treatment. Having tried and discarded most of the non-bacterial methods many decades ago, he has little to say of them except to speak generously of sulfosin, the rival which Dr. Knud Schroeder has prophesied will take the place of infection-therapy. Rat-bite fever, he thinks, may become a useful alternative to malaria in certain patients. Meanwhile, he considers, malaria holds the field, and as a prophylactic in patients with a persistently positive cerebro-spinal fluid is unmatched. In dealing generally with other methods, he points out the obvious fallacy which handicaps the discussion of nearly all of them: the smallness of the groups treated, the absence of controls, and the assessment of results far too soon after treatment. He states, quite justly, that it is not fair to compare the results in different institutions and that, in the presence of a remedy which has proved itself to be at least of some potential value, the experimenter is not justified in leaving a number of cases untreated to serve as controls of the progress of a group treated by a new method. He makes a strong plea for what he has termed "simultaneous research": the treatment of a large number of alternate cases by two methods in the same institution, and the observation of the results over a period of some years.

RADIOGRAPHY OF THE LIVER AND SPLEEN.

THE astonishing success of cholecystography prepared the way for the new method of "excretion urography" by which opaque substances are injected intravenously and photographed with X rays when they reach the urinary tract. It appears that means have now been devised for defining the outline of the liver and spleen in similar fashion. Hitherto radiologists have used artificial pneumo-peritoneum for exact definition of these organs, but the procedure described by Dr. P. Radt at a recent meeting of the Berlin Medical Society has advantages beyond its greater simplicity. It is based upon the fact that the reticulo-endothelial system, comprising especially the reticular and endothelial cells of the spleen and the Küpffer cells of the liver, have the property of taking up certain foreign colloids in a selective manner. These substances, therefore, tend to accumulate in the liver and spleen, and a search was made for one which was opaque to X rays. Radt employed first, tordiol, which is a thorium-dioxide "sol," and later a preparation in which it is combined with carbohydrate. This compound is stable and is not precipitated by the body fluids. After numerous animal experiments he injected it intravenously into 20 patients and reports that there were no serious ill-effects though occasionally there was slight malaise, with fever and shivering for a few hours. Animals injected as long as one and three-quarter years ago have remained in perfect health, and in the patients examined no changes have been found in the blood or urine except a slight temporary mononuclear leucocytosis and transitory fall in hæmoglobin. The films reproduced by Radt in his paper[1] show clear shadows of the liver and spleen. In cases where the normal structure of these organs is grossly altered the colloid has not been taken up and the shadows are indefinite. This happened, for example, in cirrhosis of the liver where the excessive fibrous tissue failed to take up the thorium. Again, where there are secondary deposits in the liver, clear areas are seen in the position of the metastases, and films illustrating this are characteristic. The spleen shadows seem to be of assistance in outlining size and shape rather than structure. The preliminary accounts of this new "hepato-lienography" suggest advancing possibilities in radiological diagnosis, but until we know more about the most suitable colloid there is evidently need for caution.

REGULATION OF BLOOD DONORS IN NEW YORK.

SINCE Landsteiner published his work on isoagglutins in blood the practice of direct blood transfusion has widely increased, and in New York it led to the establishment of a number of commercial agencies whose purpose was to provide persons prepared to act as blood donors. This development did not escape the watchful eyes of the city health department, which under Dr. Shirley W. Wynne maintains the high reputation inherited from the administration of the late Dr. Hermann Biggs. Inquiries were made which showed that some of the agencies exercised little control in the selection of the donors, being chiefly interested in profit-making; donors unsuitable for particular cases were provided, and it is stated by the Health Department that several were found to be infected with syphilis. The Department conferred with representatives of the medical profession, hospitals, and reputable blood donor agencies, with the result that the City Board of Health on Nov. 21st of last year added to the city's sanitary code a set of regulations which will enable the New York health authority to exercise suitable control. For the purpose of the regulations a blood donor is defined as a "person who holds himself out as willing to dispose of his blood, or who offers his blood, or whose blood is used for transfusion purposes for a fee;" while the definition of a "blood donor agency" is "any office, registry, place or establishment which employs, engages or supplies or advertises or holds out to employ, engage or supply any person or persons whose blood is or may be used for transfusion purposes." Under the regulations it is illegal to act as a blood donor without a certificate of registration issued by the Department of Health, or otherwise than in accordance with the regulations. It is also made illegal to "conduct, maintain or operate" a blood donor agency without a permit from the Board of Health, and the agency must conform with the terms of the permit and with the regulations. The action taken by the New York Board of Health affords another instance of the wide legislative powers in relation to public health with which American cities have been entrusted. In this country it would be necessary to pass an Act of Parliament to secure the control over the practice of commercial blood donors which in New York has been effected by means of regulations made by the City Board. And it is noteworthy that the Board did not make this extension of the law until the question had been fully explored in conference with the medical profession.

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[1] Med. Klin., 1930, xxvi., 1888.

A COMMITTEE ON NUTRITION.

THE Minister of Health has appointed a committee to advise him on the practical application of modern advances in the knowledge of nutrition. The members are: Prof. Major Greenwood, F.R.C.P., F.R.S. (Chairman); Prof. E. P. Cathcart, M.D., F.R.S.; Sir Gowland Hopkins, F.R.C.P., P.R.S.; Miss Jessie Lindsay; Prof. E. Mellanby, F.R.C.P., F.R.S.; and Prof. V. H. Mottram. They will hold office until Dec. 31st, 1933, and will then be eligible for reappointment. The Secretary of the Committee will be Mr. F. R. Hudson of the Ministry of Health.

WORK OF THE ROSS INSTITUTE.

THE industrial antimalarial committee of the Ross Institute has lately reported on interesting work which it has done in different parts of the world. At the Institute's Assam branch Dr. G. C. Ramsay, after dissection of about 50,000 anopheles, believed to be a world's record, found that practically only *A. minimus* was infected. It requires for breeding, clear, slowly running water exposed to sunshine. By applying to such water oil or Paris green, or by growing suitable shade-producing plants there, sickness was reduced, the drug bill halved, and the efficiency of the labour force doubled. A note of the actual balance-sheet concerned would make a valuable addition to the report; at all events the change took place after "bonification" had proved a great disappointment. Malaria, and not hookworm infection, is the primary cause of anæmia here. Ramsay's statement that there is no relationship between hookworm infection and the amount of sickness in his gardens is not likely to prove correct. When the power loom replaced the hand loom the effect was too striking for it to be realised that later the question of four or eight looms to a weaver would be a crucial economic one; but the economic truth was always there. When the main source of local anæmia, the plasmodium, is under control, the hookworm will doubtless show itself as an economic handicap as heavy in Assam as in those other parts of the world where apt tests have been made.

The Institute has been active in South Africa. Since its expedition to Northern Rhodesia the malarial incidence is said to have fallen in one mine from 27 per cent. per month to eight cases per month in a total population of between 8000 and 10,000. Sir Malcolm Watson found that some swamps in Natal and Zululand were free from malaria and some not, a puzzling problem which will not be solved till the local anopheline host has been determined. In conjunction with the Shell Trading and Transport Company work is being carried out in Burma to determine the best larvicidal oil mixture for use in hot or in cold weather, for places where the water vegetation should be killed, and for those where it should be destroyed. Sir Malcolm, after drawing attention to the warning note which we sounded soon after the introduction of plasmoquine,[1] states emphatically that this drug is no substitute for quinine, and holds that much more detailed work is needed before it can, for example, be concluded that it does in fact kill gametocytes, seeing how widely these vary in numbers from day to day in peripheral blood. Another striking tribute to the Institute refers to the effects of control measures advised by Sir Malcolm at the Noamundi Mine of the Tata Iron and Steel Company. In the Noamundi mine blackwater fever has disappeared and all primary malaria cases are believed to have been eliminated. Colonel R. Knowles, I.M.S., questions whether even in Panama anything like it has ever been seen. But it seems a somewhat ungrateful return for such unstinted praise to refer in the report of the meeting to the venerable and distinguished publication of which he is joint editor as the *Indian Medical Journal.*

These are some of the Institute's useful activities. There can be no better indication of its appreciation of the world's needs than the remark of the chairman of the committee that research and practical work on the malaria problem are almost in their infancy.

MILK AND THE GROWTH OF CHILDREN.

THE value of regular additions of milk to the ordinary diets of school-children has been demonstrated once again in a test carried out with 20,000 children attending schools in Lanarkshire.[1] The arrangements were in the hands of the Department of Health for Scotland and the education authority of the county of Lanark and were assisted financially by grants from the Empire Marketing Board and the central advisory committee of the Distress in Mining Areas (Scotland) Fund.[2] The heights and weights of all the children were measured by a special staff of doctors and nurses at the beginning of the feeding period and again at the conclusion of the experiment some four months later. The whole of the milk used belonged to category Grade A (tuberculin tested), one-half of it being given raw and the other half pasteurised. In each school one-half of the children acted as controls, the other half receiving ¾ pint of either raw or pasteurised milk. The results of the test support the conclusions reached by other workers —namely, that additional milk definitely accelerates the rate of growth as measured by increase both in height and in weight. The differences between the milk groups and the control groups were small, as would be expected in a test lasting only four months. In most of the age-groups the average increase in weight was 4 to 6 oz. more in the children receiving milk than in the controls, and the average increase in height was about one-tenth of an inch more in the milk groups. Boys and girls exhibited on the whole the same degree of improvement and the older children (7–11) showed quite as much improvement as the younger ones (5–6). No significant difference was observed between the growth-promoting effect of raw and pasteurised milk. No statistical evidence of any effect of the milk other than that on growth was recorded, but the school teachers formed the impression that the physical energy and animal spirits of the milk-fed children were stimulated so that they became more boisterous and difficult to control. Some of the teachers expressed the opinion that an increase in mental alertness was noticeable as the result of giving milk, especially among the younger children. The results of the test support the policy of the Education (Scotland) Act of 1930, under which local authorities are empowered to supply graded milk to school-children. It is expected that this power will be widely used in the near future and will result in a noticeable improvement in the physique of the Scottish race. Incidentally it is hoped that the great increase in the consumption of graded milk which would result from the general adoption of the scheme of giving a regular supply to school-children will encourage the production of milk free from tubercle bacilli throughout the country.

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[1] THE LANCET, 1928, i., 87.

[1] Milk Consumption and the Growth of School-children. Report on an Investigation in Lanarkshire Schools. By G. Leighton and P. L. McKinlay. Edinburgh: H.M. Stationery Office. 1930. Pp. 20. 3*d*.

[2] See THE LANCET, 1930, i., 417.

THE THERAPEUTIC USES OF IRON.

THE pursuit of new drugs should not lead to the neglect of old ones, as Dr. Philip Hamill, who took the chair at the Section of Therapeutics of the Royal Society of Medicine on Jan. 13th, pointed out when opening a discussion on the therapeutic uses of iron. Dr. L. J. Witts, who had been investigating the effects of iron on chlorosis in young persons, and on chronic microcytic anæmia in those of middle life, was able to place his conclusions before the meeting. Chlorosis, he finds, responds readily to treatment with iron and ammonium citrate, the patients sometimes showing an increase in hæmoglobin from about 38 to 85 per cent. over a period of 6 or 7 weeks; relapse is rare. The microcytic anæmias of middle life are usually associated with absence or diminution of hydrochloric acid secretion, glossitis, splenomegaly, and, in some cases, dysphagia. He found that 17 patients with anæmia of this type recovered on doses of grs. 60 to 120 of iron and ammonium citrate given daily over a period of 4 or 5 months. Those treated with doses of less than grs. 60 showed no definite improvement, and he does not recommend reduction until the hæmoglobin has risen to a normal level; as there is a tendency towards relapse in these cases the patient should persist with a maintenance dose of not less than one-third of the curative. A lag of about a month is to be expected before the treatment begins to show any result. Another aspect of the chronic microcytic anæmias was discussed by Dr. D. T. Davies; he mentioned the high viscosity of the gastric juice and the reduction in pepsin which accompanies the hypochlorhydria or achlorhydria. After giving histamine to patients with microcytic anæmia he had found an increase in pepsin and a fall in the gastric pH consequent on the appearance of more hydrochloric acid. He thought that some form of gastritis might underlie the condition, which was possibly an alimentary rather than a blood disorder. The meeting agreed with Dr. Witts in his view that liver or stomach extracts failed to provoke a reticulocyte crisis in anæmias of the chlorotic and microcytic types, and this led to the consideration of the value of iron in pernicious anæmia. Dr. Janet Vaughan had observed cases in which Addisonian anæmia was associated with a mild iron deficiency; in a certain number of these the addition of iron preparations to liver treatment led to an improvement in the blood count. Dr. Izod Bennett was able to confirm this. He referred to the origin of liver therapy; liver had been employed, in the first place, because it was rich in iron; now the iron-free liver extract was given and was found to be equally effective. He thought it conceivable that it was not the iron and ammonium citrate which produced recovery in chlorosis but some impurity in the preparation, such as copper; Dr. Witts, however, thought the proportion of copper present insufficient to have a therapeutic action. The value of the ferrous salts was emphasised by Dr. Witts and Prof. J. A. Gunn; they were effective in much smaller quantities than the double salts, gr. 4 being a suitable dose for an adult, and they usually produced good results within six weeks of the beginning of treatment.

Dr. Helen Mackay said she had given iron preparations to infants during the first year of life and had found that it was well tolerated if the initial dosage was small. Given to a series of artificially-fed infants, iron had occasioned a remarkable rise in hæmoglobin as compared with control cases. Anæmia was found to be common in breast-fed as well as artificially-fed infants, showing that no one particular method of feeding was at fault. Infants small at birth grew relatively more quickly than others and showed a greater tendency to anæmia. Dr. Mackay drew attention to the spontaneous and temporary rise of hæmoglobin which occurred in all infants between 2 and 7 months of age, and which made caution necessary in estimating the results of the iron treatment during that period. In addition to the improved hæmoglobin content, Dr. Mackay was able to demonstrate two other effects of iron when given to infants. The first was a reduction in illness amounting to a diminution by one-half of the attack-rate in the children receiving iron as compared with those untreated. The second was a marked increase in the rate of growth of those treated. Dr. Bradford Hill, as a statistician, confirmed her figures; those dealing with the attack-rate he had investigated with great care, but could not find a source of error.

STAFFING MUNICIPAL MATERNITY HOMES.

THE question whether practitioners are to be allowed to deliver patients confined in municipal maternity homes has arisen in an acute form in Birmingham. Until recently the family doctor who had given antenatal supervision was summoned when labour set in, but in the view of the local Maternity and Child Welfare Committee the variation of standards and methods of treatment adopted by private practitioners involves an element of risk, and it is now proposed to appoint full-time medical officers as accoucheurs. Obviously it is easier to ensure smooth and efficient work if all labours in one home are conducted under one direction and responsibility, but convenience alone should not, we feel, be the main consideration. If the science and practice of obstetrics is to make progress, continuity of observation and service from early pregnancy until the puerperium is essential. In the past, when far more reliance was placed on pelvic measurements as a factor in prognosis, careful records of antenatal examinations were valued as impersonal documents. Nowadays the dimensions of the pelvis alone are known to be a poor guide to the prospects of an easy labour and the estimation of relative size of fœtal head and pelvic outlet is recognised to be difficult; nor, in cases where toxæmia is suspected, do the results of periodical tests of urine reveal clearly the outlook unless they are correlated with other circumstances by a trained observer. Only experience in following up cases can teach judgment; little can be learnt on the one hand from antenatal observation which is cut short at the crucial moment, or on the other from skilful management of abnormal conditions whose genesis is obscure. It is therefore greatly to be hoped that in Birmingham as elsewhere a way will be found to prevent practitioners who have recommended their patients to seek admission to maternity homes for confinement from being penalised by having to relinquish their responsibility.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

III.—HOW THE MIND WORKS.

THE DEVELOPMENT OF MIND.

It is easier to understand the symptomatology of mental disorders if we have a clear picture as to how the mind has developed and of what parts it is composed. The ordinary conception of "mind" is that it is solely concerned with processes of conscious thought, but a little consideration will show that this is not true. A great deal of the difficulty which we experience in understanding ourselves and our patients is due to this erroneous conception that mind is only occupied with conscious thinking processes. It is for this reason that the term "unconscious mind" has proved such a difficult one to understand. If "mind" was "consciousness" how could there be such a thing as an unconscious consciousness? But is mind only consciousness, and if it is more than that, what is it?

Let us begin with the broadest view of the initial development of the nervous system. With the progress of differentiation of function, it became increasingly necessary for the organism to evolve a central selective station which might inhibit certain impulses whilst promoting others. In the ordered interaction of the nervous system, the different parts of the human organism are enabled to perform their work as units coöperating in a team. For example, the lungs and the organs of digestion, by co-relation and inhibition in the nervous system, perform in health their functions harmoniously and "unconsciously." Consciousness of the existence of a certain organ is usually a sign that that organ is in a state of disorder.

On a level above that of the coördinative and inhibitive cell stations we have the field of emotion. We may describe an emotion as a feeling associated with a wish or need. Primarily, emotions are associated with instincts, and although psychologists are not agreed as to what exactly the fundamental instincts may be, they are agreed on the general principle that instincts and emotions are, as it were, two points of view of an internal tendency to behave in a certain way in response to a certain stimulus. For instance, with the development of a need for nourishment on the part of the tissues a feeling of hunger is felt, and the behaviour of the organism then tends to be directed in such a way as to satisfy the need for food. The need is felt and, other needs being in agreement, the hunger feeling can be satisfied. On a higher level than that of the nutritional may be cited, as an example, needs associated with a feeling of fear and the organism's resultant behaviour. The feeling of fear is associated with a need for the preservation of the organism from the threat of the apprehended danger. Behaviour may be directed either towards escape or towards overcoming the threat. Other impulses, such as nutritional, then undergo inhibition and the activity of the organism is centred upon its reaction towards danger.

Another example of an instinctive feeling is that associated with sex. The urge of propagation, with its elementary biological function of preservation of the species, is liable to overcome in its intensity all other impulses, except those of self-preservation.

In animals and simpler organisms, what we understand as consciousness is either non-existent or only present to a very minor degree. Much of their behaviour is conditioned by simple reflexes or habit into which consciousness does not enter. Self-consciousness, the awareness of the self as an integral individual distinct from other individuals, is one of the earliest forms of consciousness and one of the least highly developed. Awareness of alternative courses of conduct, with its inevitable conflict with other impulses, only arises in a late stage of human development, and it is the beginning of a further extension of the field of consciousness. Ultimately it is enlarged to include not only the awareness of concrete external objects and internal impulses, but also a discrimination of abstract ideas of which the variety is almost without limit. Such development takes place through associative paths, in which a series of links is developed as a comparison with and extension from past experience. All later experience is, therefore, more or less intimately associated with something that has previously happened. Whilst it is entirely new, experience has no meaning for us at all, and it is only through its association with past experience, with something old, that it has *meaning* or *value.*

A simple way of understanding the problem of mental development is to relate it to the rings which develop, year by year, in the cross section of a growing tree. The central ring is the oldest part of the tree and successive rings represent the "experience" of the tree year by year. In the accompanying diagram (Fig. 1) there are five rings which may be taken as representing the development of the human mind, but not in periods of years. Each ring represents a successive stage of development by experience. The central, most elementary and oldest ring is that of the *coördinative reflex cell stations* in the brain—e.g., those which control the action of the physical organs of the heart, lungs, &c. The second ring is that associated with the *instinctive-emotional* life. It is the centre associated with energy and movement, the wishes and needs of the organism in its relation to life and experience. The third ring represents the development of *qualitative* feelings. Life and experience at this stage have definite feeling values, feelings of pain and pleasure, good and bad, but the level of such feelings can hardly at present be called "conscious." It is in the next stage that a further

FIG. 1.

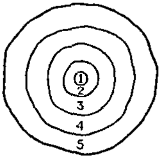
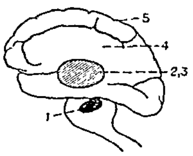


Diagram illustrating development of the brain.

FIG. 2.



The brain. (Semi-diagrammatic.)

1. Coördinative cell stations.
2. Dynamic level—instinctive.
3. Emotional level—feeling states.
4. Pictorial level.
5. Abstract rational level.

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* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. The first and second lectures of the series appeared on Jan. 3rd and 10th, 1931, respectively.

differentiation of feeling values takes place at what is called the level of "*picture-thinking.*"

At this stage awareness of an external world sees experience and external stimuli in terms of crude concrete objectiveness. Discrimination has picked out certain outstanding objects and endowed them with their own feeling tone. Consciousness is, at this level, becoming differentiated, but it is concrete, pictorial, symbolical, and always associated with a strong feeling tone.

The last level is arrived at with the outermost ring, which is called *rational*. At this point awareness of an external world has become differentiated into a realisation of the finer distinctions and comparisons. The feeling tone is less and symbols have become split up and qualified so as to be abstract vehicles rather than concrete pictures, and this represents the level of intellectual consciousness.

Fig. 2 shows this principle applied to the various levels of the human brain.

(1) Indicates the central coördinative cell stations concerned with organic function (medullary ganglia).

(2, 3) The basal ganglia which are probably associated with the fundamental "energy" of life and with emotional states. It is interesting, and it should make us tentative in all our conclusions, that we are still entirely unaware as to what the source of the dynamic of life may be, or as to the manner of its operation. But general indications are in favour of the basal ganglia having something to do with it and, as long as it is only held as a working hypothesis to be abandoned as soon as anything better or more certain takes its place, there is no harm in the tentative acceptance of this as being true.

(4) The deeper layers of the cortex indicated by (4), with all their associated paths to the basal ganglia and different parts of the cortex, possess a larger and a cruder type of cell than the superficial layers of the cortex and may perhaps be assumed to function in the way described as "picture-thinking."

(5) This is the superficial layer of the cortex in which the higher, more abstract, processes of reason take place, but each successive higher level can only be understood as being derived by a process of differentiation and modification from earlier and more primitive methods.

The Function of Thinking.

Those who are accustomed to think of the function of the mind as being entirely conscious naturally make the mistake, since they are aware of the dynamic quality of life, of thinking that consciousness is the centre of dynamic activity. It is not. The function of consciousness is selective and it probably possesses no energy of its own. *The energy of life is to be found in the deepest levels which are prior to and primarily independent of consciousness.* This is the level of instinctive wishes or needs, and it is not *necessary* for these to enter consciousness. Many are dealt with by an automatic process without entering consciousness at all. Some, which originate in a distant racial past, do not enter consciousness because they are not related to any individual consciousness of "now." Others enter consciousness as *wishes* and the function of consciousness is to determine how the wish may be gratified in the most satisfactory way without causing trouble. The function of consciousness, then, is selective and adaptive, but it is not dynamic. *It is a means to an end and not an end in itself.* The end, from one point of view, is the gratification of the instinctive wishes and needs which activate human behaviour. From another point of view, consciousness may be said to provide a channel for the fullness and freedom of emotional self-expression. In any case its selective function is to fulfil the needs of life without conflict or discord. The "will" may be defined as that part of the individual's instinctive energy which enters consciousness and is directed towards unity, freedom, self-gratification, and self-expression.

THE SAVAGE, THE CHILD, THE NEUROTIC, AND THE GENIUS.

It is to be expected that the minds of the child and the savage would show something in common, since the savage is phylogenetically infantile and the child is ontogenetically primitive. The fifth layer i both, that of abstract reason and higher synthesis, is as yet not fully developed. In consequence, the layers associated with uncoördinated wish fulfilment with a strong emotional content and a tendency towards pictorialising, are those which we would expect t find most in evidence. Both in the primitive min and in the mind of the child the activities are mainly those of wishing, feeling, and picturing, withou strong rational or coördinative development.

It is now necessary to define what we mean b "imagination," because of its association with pictur thinking. Imagination may be defined as an ability t pictorialise life without relation to experience. If wis fulfilment is associated with a strong sense of fear the dangers of reality, imagination may becom phantasy. Phantasy is a flight from life, wish fulf ment being directed inwards as an escape fro experience of reality, owing to the association reality with the feeling of fear.

It was stated in Lecture II. that an exaggerat tendency towards fear feeling was characteristic of t nervous temperament. All those who are thus ove sensitive to fear stimuli are uncertain in their behavio reactions. Where fear is strong, the tendency towards false adaptation and neurosis. The neurot may also be compared with the child and the primiti savage, because of the same strong tendency towar picture-thinking which exists in all three.

Besides being a prominent characteristic in t savage, the child, and the neurotic, the faculty imagination is also predominant in those who a assigned the quality of "genius." It has often be observed that genius and a tendency to "neurosi go together. What is the cause of this associatio Both the genius and the neurotic are imaginati sensitive to external stimuli and emotionally responsi In both the level of picture-thinking is stron developed and both are sensitive to primitive a innate sources, of an unconscious racial characte But whereas the neurotic is inclined to dissocia imagination from life—living in terms of phantasy there is a quality of reality in the genius whic perhaps owing to an increased "energy" factor some innate quality of technical ability, obtains mastery over life and achieves self-expression throu the work of his artistic creation. The genius uses t material of reality as a check upon his imaginatio and to innate creative ability adds an acquir development of technical knowledge. The neurot has the same source of inspiration, without the sa creative ability or attachment to reality.

PICTURE-THINKING.

It may have been considered arbitrary to gi picture-thinking a place of importance as the sour from which a more abstract type of consciousne has been developed. Let us consider, therefore, so examples of what is derived from this tendency t make pictures.

The first means of communication between o individual and another was probably by gesture, whic is a method of making pictures with the hands. further development of the pictorial method o intercommunication was by the development o writing, and this further extension was made possib by the greater pictorial aptitude of some kind of stick. As mastery of materials was gained, drawing and painting were developed as a means of pictorial self-expression and intercommunication. Language, which began by gesture, was developed by means of "picture noises," and the pictorial element in language has always been a method by which meaning has been conveyed. Slang is particularly interesting from this point of view. It is essentially picture-talking, whether it is of the familiar English type such as "letting the cat out of the bag," or the modern American variety of "spilling a bibful" or "the kitten's pants." The picture-making tendency is most freely utilised in poetry, where simile or metaphor convey meanings and emotions which more abstract forms of expression are unable to convey.

> "I will go down to the great white mother,
> Mother and lover of man, the sea.
> I will go down to her, I and none other,
> Kiss her, caress her and mix her with me."
> *Swinburne.*

Other forms of primitive picture-making by means of words are the fairy tale, nursery rhyme, folk-lore, myth, allegory, and parable. The last two only differ from the others in conveying a moral.

There is one characteristic in all forms of picture-making which is very liable to be overlooked. We are inclined to look at the picture as *something in itself* and to miss the fact that its sole function has been to convey the *meaning* quite apart from itself. For instance, a political cartoon of a donkey with a human head at either end, as a picture by itself might be regarded as a zoological monstrosity. It has no meaning without *interpretation* and this applies to all cartoons. Their purpose is to convey a meaning, and before the meaning is appreciated the picture requires interpretation, which depends upon other knowledge of events previously possessed by the interpreter. In other words, it requires association with previous experience. However, much of this "picture-writing" has lost the meaning which it was originally intended to convey.

A folk tale, such as that of Cadmus (Jason) and the dragon's teeth, may be read simply as a story of a man who sowed some dragon's teeth in the ground with a very remarkable and unlikely result. But if the teeth are taken as pictures, which require interpretation before they can be understood, then in meaning they are not teeth at all, and the resultant armed men are no longer so impossible.

Fairy stories and nursery rhymes, passed down from generation to generation from a far-off past, have also lost the meaning which they were originally intended to convey. Let us take, for example, the common slang term of "fiddlesticks." A fiddlestick is a definite object of very limited usefulness which is, as a rule, not used by those who commonly use the expression "fiddlesticks." In the nursery rhyme:

> "There was an old woman who lived in a shoe,
> She had so many children she didn't know what to do"

there seems to be no association between the fact that the old woman lived in a shoe and the fact that she had so many children she did not know what to do. But perhaps another nursery rhyme may throw more light upon the problem.

> "My master's lost his fiddling-stick,
> My dame has lost her shoe."

Here we have an association between the fiddling-stick and a shoe. The fiddling-stick is a picture of something which moves up and down in a rhythmic fashion, so that if we are to interpret, with the material so far available, we find an association between something which moves up and down in rhythmic fashion, something which is like (but is not) a shoe, and the production of a great many children. That this is not an entirely unusual association will be seen from the following, taken from the notes of the patient (Case J) who had an obsessional impulse to count in fours. She wrote the following notes on her feelings as a child about her father's umbrella:—

> "When I was a child I used to have a particular attachment to my father's umbrella. I always told it where we were going and what we were going to do and expected it to be upset or pleased according to my own feelings.
>
> "It had to keep in step with my right foot. If I dropped it I was angry with it, and told it that it was stupid and clumsy and I usually shook it. When I rode on a tram or a bus I put the ferrule of the umbrella inside my shoe to keep it close to me and keep it warm. I liked best to sit on top of a bus in the back seat where I could nurse the umbrella in my arms and point out all the interesting things to it as we passed them. This was not often practicable, for, if my mother found out what I was doing she generally took the umbrella away. Sometimes I was not allowed to carry the umbrella. On these occasions I whispered to it to break or tear itself or trip up my mother. Always when I got home I placed the umbrella in the stand on my father's side and wrapped his overcoat round it, partly to hide and protect it, partly to aggravate my mother, who slapped me every time for hindering her from finding it when she wanted to go out, but I continued to do it for years."

When the patient wrote these notes she had no realisation of the meaning which the picture of the umbrella conveyed to her. To her the umbrella was an umbrella, and in the "picture" of a shoe she saw only a shoe. She did not realise that another picture of the umbrella would have been a fiddlestick and that she wished to be in the position of the old woman in the nursery rhyme.

To whatever extent language may be developed in its ultimate differentiation, it is fundamentally derived from a primitive picture form. Words are the symbols we use to express the meaning which we wish to convey and in themselves they have no value apart from this meaning. It has been well said, "words are the counters of wise men, but the money of fools."

It is not easy to appreciate that language is derived from unconscious sources, but it is a fact. The original development of words in all languages has not been the work of philologists and academicians, but they have grown by a process of unconscious selection because of the meaning which they were able to convey. The example quoted above, of "fiddlesticks," applies to far more than the development of slang. There is a most interesting field of psychological and philological research, as to the *unconscious* values and associations which have determined the use and development of certain words from their original root meanings. For example, in French there are the two similar words —"mer" meaning sea, and "mère" meaning mother. It is not by chance that two such apparently different meanings as "sea" and "mother" should be linked by similar word-forms, because the Sanskrit root of each is "ma" meaning "to create," which is usually the meaning of the sea which so often occurs in dreams.

PICTURE SYMBOLS.

Our consideration of picture-thinking has enabled us to approach the problem of symbolism with all that is necessary to understand the meaning and importance of the everyday use of symbols. A symbol conveys a *meaning* apart from itself, and, as is the case with all primitive and unconscious picture-thinking, it usually also conveys a *feeling*. For instance, the flag and the cross are symbols, simple in themselves, but pregnant with meaning and affective tone. Picture-thinking and symbolism are necessary and valuable to us for their simplicity, economy of form, and as a vehicle for the apt conveyance of emotions.

Symbolism is the material, whether we wish it or no, through which artistic and creative effort must be applied. But symbolism, apart from its undoubted value, is the source of a very subtle and serious danger. The danger is that in the riot of feeling which a symbol may arouse, its meaning may be ignored. The primitive and the child, motivated by an ever-present fear, tend to prefer the concrete to the abstract, the definite to the ill-defined, the known to the unknown. Fear of the unknown, the immaterial, and the vague is the source from which is developed much of the so-called materialistic and rationalistic philosophy. We like our words because we fear their meanings. Like a drowning man who clutches a straw, we hold on to our symbols, lest their form should escape us in those doubts which must assail us when we seek to unveil their true meaning.

To all of us symbols are a danger, but to the neurotic symbols are a disease. The life of the neurotic is full of unknown and unvalued symbolism, of forms and rituals of an obsessional character, the meaning of which has never been differentiated in consciousness. One of the functions of consciousness is to differentiate the symbol from its meaning, the means from the end, and to set free the feelings and motives which have become locked and fixed in a dead materialism of symbolism.

Dreams.

When we appreciate the meaning, importance, and danger of symbolism, and the absolute need for interpretation before the meaning of the symbol is understood, we can approach the subject of dreams.

It has already been stated that the tendency is to confuse the symbol with the meaning and to say that an apple is always an apple. It is not true. In the story of Adam and Eve, the apple was not an apple at all, but a symbol. Dreams are an activity of the "picture-thinking" layer of the mind and as such are meaningless when regarded superficially as things in themselves, but full of meaning when regarded as pictures, put in the story as symbols to convey a latent meaning which can only be discovered by interpretation.

The exact processes accompanying the physiology of sleep still remain uncertain, but as a working hypothesis it may be assumed that it is the cortical layers of the brain—i.e., those of a superficial and differentiated type of consciousness—which are in abeyance during sleep. Whether this is due to a localised cortical anæmia is uncertain, but the evidence tends to show that the depth of sleep corresponds with the depth of cortex which is inactive.

People seem to vary in the extent to which they are aware of dreaming during sleep. Some authorities state that there is always dream activity during sleep, whether the sleeper is aware of it or not. If we regard the dream activity as an activity of the deeper layer of the cortex, it would seem probable that in the deepest kind of sleep the sleeper may be below the depth of the recoverable dream layer altogether, in which case he would be in a condition of dreamless sleep. It is certain that some people are usually aware that they dream, although on waking up they may not be able to recollect its details. Others will say that they never dream, but this probably refers to the fact that they never recollect their dreams. A great majority will say that they dream occasionally, but under psychological treatment it is usually found that patients are more frequently aware of their dreams than in the ordinary course of life.

There is a common attitude towards dreams which attributes them merely to digestive disturbances. It is quite true that digestive disturbances *do* influence dreams and are usually conducive to the nightmare type. However, it is probably wrong to say that digestive disturbances *cause* a dream. A dream is the result of an impact between an internal emotional state and an external stimulus. As a rule the external stimulus has been experienced during the previous day, but from the point of view of dream-consciousness irritation of the vagus nerves may be considered as an adequate nervous stimulus sufficient to activate or modify the dream state. However, it must not be forgotten that there is still the internal emotional tension of the individual to be considered, and this is independent of all external stimuli whether due to indigestion or to the previous day's experience. A dream is an expression of the inward being of the individual—it is part of himself. It differs from consciousness in being independent of conscious inhibition, which is absent owing to the abeyance of the superficial cortical layers. It therefore provides information which may never otherwise enter consciousness as to the inward psychological state of the individual. Finally, the dream is dynami It is as much an expression of a motive as consciou behaviour is an expression of a motive. In the same way that we can inquire with regard to conscious behaviour, "What is the motive underlying this?" we can also ask the same question of dream behaviour, but without the difficulty of having to deal with superficial conscious inhibitions and distortions.

Before we proceed to a classification of dreams there are one or two further points which deserve consideration. The material which is used in a dream is described as its "manifest content," and is only to be regarded as the symbolism which conveys the meaning or "latent content." It is usually related to recent experience, and much of the content of a dream may be accounted for in this way. The question is, why the dream should have selected only such material as it does out of such a large potential source of supply derived from immediate experience? There must have been some selective process which chose this part of one experience, ignored the remainder, and linked it up with some other part of some experience which was actually quite out of context with it. This is the dramatic process of the dream which chooses just such elements of experience as it requires for its own completeness.

It sometimes happens that one item in the dream may seem to be derived from many different sources. For example, a person appearing in the dream might have the face of the patient's mother, but in other respects the person of his wife. This process, "condensation" as it is called, enables the dramatisation of the dream to take place with a maximum of economy.

There is one great difficulty in dream interpretation of which all who have tried to understand their own or the dreams of others must be aware. It has already been stated that the activity of the picture layer of the deeper cortex is expressed in picture terms, in the form of symbols which, to be understood, require to be interpreted. Perhaps in a dream I find myself by the side of a river which reminds me of a certain day on a summer holiday. Is the river to be regarded as a symbol, and therefore not as a river, or is it to be regarded as only that particular river of which I am reminded? Perhaps the dreamer is beating somebody with a stick. Is the stick to be regarded as a stick or as a symbol and therefore not as a stick? It would appear that some details of a dream require interpretation, but others are to be taken at their own face value. The difficulty is a very real one but not insuperable. All that we have to discover is the *meaning or value to the dreamer of any particular item in the dream.* This may be arrived at in different ways. For instance, of any item in a dream one may ask the patient "What do you feel about it?" "What does it mean to you?" or "What does it remind you of?" In each case one is interpreting the meaning of the picture by finding out its personal value to the patient.

Are there any universal symbols which may be taken as having a definite meaning, apart from any value which the patient may be inclined to give them? There is no doubt that it is extremely dangerous for anybody interested in interpreting dreams to assume the validity of universal symbols. It is quite true that many symbols are found in the dreams of many patients, in many different circumstances, in many parts of the world. If, however, the meaning is what the interpreter has been led to expect by his knowledge of universal symbols, then this meaning may be obtained direct from the patient as what it means to him. It is never safe to assume that a symbol in a dream means what it ought to mean. The most dangerous ground of all in which to employ universal symbolism is that associated with sexual factors. It is too easy and too dangerous to assume that a walking-stick is always a phallic symbol. It is quite possible that it has an entirely different significance to the patient; it may be no more than it seems, an additional means of support.

Are there dreams which have no meaning, no motive, and no value? It is impossible to say, but it is certain that from the point of view of the psychotherapist dreams that have a useful discoverable meaning are definitely limited in number. With infinite patience, great aptitude, and a large measure of luck, it is possible that all dreams might be found to have a meaning; but it is certain that in practice a large proportion of dreams are beyond the ability of the psychotherapist to understand with any degree of satisfaction if he is approaching his task in a critical way.

CLASSIFICATION OF DREAMS.

The following is suggested as a classification of dreams: (1) wish-fulfilment; (*a*) simple, (*b*) desired but feared; (2) anxiety (feared and not desired); (3) teleological; (4) self-critical; (5) repetitive; (6) indefinite.

WISH-FULFILMENT.

(*a*) *Simple.*—This is typical of the child's dream. He wants a bicycle and dreams that he is its proud possessor. It is a dream of simple wish-fulfilment without arousing any complex issues and depends upon the existence of a single wish without opposing conflict. The dreams of hungry explorers isolated without food on an ice-floe would be of this type. They might dream of luscious steaks, with succulent vegetables, served in spacious restaurants.

(*b*) *Desired but feared.*—What more often occurs, however, is that the wish cannot be fulfilled without a certain degree of conflict being aroused. Such are the comparatively common "death-wish" dreams. The subject matter of this dream is usually in terms of dead bodies and coffins, perhaps with added gruesome details, and the feeling tone aroused in association by the patient is that of fear or horror. A wish is being expressed in the dream for the removal of some undesirable person, but it is a wish that obviously cannot be accepted or even visualised in consciousness without disapproval. In point of fact, when one appreciates that the dream is only to be taken as symbolism, the wish is seen to be not so horrible after all. The motive of the death-wish is a "wish to be rid-of." Death is the simple and practical form in which the "wish to be rid-of" is expressed. It will, however, be readily realised that after the "wish to be rid-of" enters consciousness as a death-wish, the patient may be horrified to find himself possessed of the motives of a would-be murderer. Much of the patient's anxiety can therefore be allayed by the interpretation of this type of dream from its simple wish foundations. To accept the idea in consciousness of the wish to murder a person is a reasonable cause for anxiety, but there is nothing to worry about if the patient realises that he is only anxious to get rid of that person because that person happens to be in the way of his wish-fulfilment.

ANXIETY DREAMS (FEARED BUT NOT DESIRED).

This is a common type of dream, of which probably the most familiar example is that of "missing trains." The dreamer is afraid of his inadequacy and feels incompetent to fulfil the task which lies before him. His dreams express his lack of confidence and fear of failure. A medical student, preparing for an examination, may dream that on the way to the examination hall he misses the train, that when he has caught it, it goes to the wrong destination, that it finally arrives half an hour late, that he has then lost his pen and when the closing hour has struck he is still only half-way through the first question. The feeling tone throughout is one of anxiety owing to a feeling of inadequacy.

TELEOLOGICAL DREAMS.

Dreams, besides referring to the past and present, frequently contain suggestions as to the solution of a patient's difficulties. A woman of 47, wearing horn-rimmed spectacles, a severe expression, and a masculine type of dress, was the headmistress of a large girl's school. She had entered and passed with honours every examination within her power, and judged from one standpoint her life could be measured as successful. As a child her parents had told her that they were bitterly disappointed that she was not a boy and her whole life had been directed towards making up for this unfortunate defect on her part. Up to a point she had succeeded and she had been able to contribute, from very small beginnings, to her parents' comfort in their old age. But she was subject to extreme fits of depression and she was afraid of going out for walks by herself in lonely places, or if it was dark, in case she should be attacked by a man. It was for this depression and anxiety that she came for treatment, during the course of which she had the following dream:

> "I was on the top of a high hill with some other people and I was told that we had to go down and cross the river that lay between the base of the hill and some rugged barren ground on the other side. I did not wish to go and wanted to stay on the hill. I told the others if they went there would be an awful disaster, but in spite of my warning they went down the hill and commenced to cross the river. They had only got half-way across when suddenly there was a terrible storm with rain and wind and they seemed to be washed away. Then I found myself going down the hill and knew that I also had to cross the river, but somehow I did not feel afraid because in my hand I held a talisman. It was circular, like a little box, and I seemed to touch it with my forefinger and then touch my face. With this talisman I was able to cross the river without danger."

She found some little difficulty in evaluating her talisman, until she was asked to make the gesture that she had to make in the dream. There was no doubt about it, and she discovered its meaning for herself. The talisman was a powder-box and puff, symbols of femininity which she had always affected to despise.

SELF-CRITICAL DREAMS.

It is a great mistake to regard the unconscious or its dream activity as being entirely either stupid or evil. This part of the mind is possessed of creative power, a sense of humour, and a vivid artistic and dramatic sense. The critical capacity of the dream consciousness is occasionally devastating and may occur with startling vividness in otherwise uncritical people. For example, a patient entered a consulting room one day, obviously displeased with life. He said he had nothing to talk about and then he admitted that he had had a dream, but said that all dreams were nonsense and that this dream was particularly useless from the point of view of analysis. In other words, his defensive reaction was very strong and was an indication that the dream was likely to be a very fruitful one when interpreted. It was as follows:

> "I was in the corner of a field alongside which was a muddy lane. In front of me was a donkey harnessed in a broken-down little cart, but it had funny legs. They were all twisted like the tendrils of a vine and it looked very unsteady."

The donkey may be taken as a universal symbol in this dream and no experience of dream interpretation is required to understand the self-criticism which it displayed. The patient's association with the donkeys legs was that they were just like the tendrils of a vine which, he explained, could not stand up by itself but required support from something stronger.

REPETITIVE DREAMS.

The repetitive dream is due to a tendency to continue into the dream state the experiences of the previous day. If one has been driving in a car all day, the motion of the car may occupy a prominent part in the dream. Another example is when the mind has been occupied all day with the addition of figures or any work requiring intense application, and continues in the same way in the dream.

INDEFINITE DREAMS.

This last group has been left to contain those dreams which cannot be fitted into the previous categories. It is at least useful as an indication that there are many dreams which we do not understand. Perhaps they are just dream imagination, play without purpose, without meaning in themselves.

Nothing has been said in the foregoing categories with regard to prophetic dreams. Prophesy has always been regarded historically as the main function of the dream as, for instance, in the case of Joseph and the fat and lean kine. It is interesting in this connexion to realise that the measurement of time is a convenient convention on the part of consciousness, which has no existence in the dream state, or in fact at all apart from our consciousness of it. This has been said by some to explain the prophetic nature of dreams, but if there is no time in the unconscious there is at least a difference of before and after, as much as in consciousness. The difference of before and behind, future and past, is independent of any conscious convenience obtained from the time measure. It is probably true that telepathy occurs in dreams, but a claim for anything so remarkable as prophesy should be regarded with a good deal of hesitation. What is certainly the case is that the unconscious, as was said of Manchester, sometimes feels to-day what conscious London is going to think to-morrow. It is therefore obvious that it may be possible to deduce from a dream the course of a patient's subsequent behaviour.

Symptoms.

To complete our understanding of the method in the madness of unconscious processes, it is useful at this point to link up dream formation with symptom formation. It has been said that the dream is the activity of the deeper picture-forming layers of the brain associated with instinctive wishes and fundamental emotional states. The same applies to symptoms. They are derived from the same source, motivated from the same wishes, and cast in the same pictorial and unreasoned mould. The following is an example of such a phobia.

CASE K.—A man, unmarried, aged 37, had a phobia of policemen and begged to be allowed to have a personal interview with the local police inspector in order to find out exactly what it was of which he was being accused. He never passed a policeman without feeling that he was going to be arrested, but he was completely unaware of having ever committed a crime. It was easy to recognise that the policeman was a symbol representing law and punishment, from which it was a short step to deduce the fact that the patient had, at some time, done something of which he felt ashamed. This was discovered by analysis. When he was 3 years old he had been induced to commit an improper practice with an elderly female relative, and had been discovered doing so by his father, who had severely and quite unjustly punished him. From that time he had always felt terrified of his father's presence. The episode had been long forgotten, but the sense of guilt and the fear of punishment had been transferred to the symbol of policemen in general. The situation had been pictorialised and the meaning had been lost in the neurotic's adherence to the form of unconsciously chosen symbolism.

The obsessional case (J) mentioned in Lecture II., was another example of a picture-forming symptom in which the patient gratified the two conflicting wishes in a single obsessional compromise. On a more complex level of behaviour the following case may be cited.

CASE L.—A man, married, aged 30, was under treatment for sexual impotence. In a dream which occurred early in the course of his analysis, he had dreamt that he was standing in the Liberal Club waiting for the entrance of a world-famous politician. He and a few others had just started to sing "For he's a jolly good fellow," when a procession of athletes in shorts and vests filed *smartly* into the hall. These changed from male to female figures in a state of nudity. Interpretation of this dream showed a double tendency in the patient's life to identify himself on the one hand with the successful extraversion of the politician and the athletic prowess of the male athletes, but on the other hand an identification at a deeper level with the feminine sex. The further his analysis proceeded the more examples were adduced of this feminine identification. He wished to be a woman. His analysis had proceeded for a long time when for psychological purposes, he was asked to notice the characteristics of the way in which he shook hands. At first he said this was perfectly normal, but then he realised that he shook hands high up, about the level of his neck holding the tips of the fingers. His first association was that some people had a ridiculous method of an exaggeratedly hearty and dramatic hand-shake. His second association was "I feel if I were to shake hands in the ordinary way down there, there would be a danger of touching one another in the sexual parts." Then he said, "This is what comes *into my mind. If I shake hands in the (h)air it is nearer* my head and therefore away from my sexual feelings. Perhaps this may be an escape." At this stage, it was pointed out to him that although his grammar was usually perfect he had aspirated "air" making it into "hair." He was asked to say what came into his mind with regard to "hair." He said: "I will tell you what *comes* into my mind, but surely it cannot have anything to do with it. I remember when I was about 14, being told by a rather nasty-minded *young* friend of mine of how he *had* sat with a friend of his on the sea front at night with a girl. They had shaken hands with each other inside her knickers." In such a brief *space of time* (about ten minutes in all), it had been possible to arrive at the cause of the manner of the hand-shake. Again he was identified with the girl *of the* episode, and by his first *association* he wished to be touched on the "hair" (sexual), but this wish had been suppressed. The elevated hand-shake was a defence, of course, against the wish to be touched in the region of the pubic hair. As he had said, it was "nearer the head," but the original wish for female identification was fulfilled through the fact, which he readily recognised was quite obvious, that his type of hand-shake was a distinctly feminine one.

Illness, as a whole, needs also to be evaluated from the point of view of its symbolical significance. A patient is not ill for the sake of illness, but for the sake of the value or meaning of illness. The life of the neurotic with its phobias, obsessions, and characteristic behaviour is meaningless when viewed superficially, but when it is interpreted and personally evaluated, it is as full of significance as his dream activities. Behaviour characterised as "simply insane" and therefore judged as meaningless is, in fact, full of meaning if it is regarded as symbolical and purposive. It is not for nothing that the insane patient regards himself as a stone, or Napoleon, or pleads that he is the object of mysterious, external influences. *Insanity, although a mental disorder, is arrived at by an inexorable, ordered and understandable, although unconscious, process.*

Self-knowledge and its Limitations.

The interpretative method can do much to resolve the patient's anxiety simply by exposing the motive and meaning of his apparently disordered and uncontrollable impulses. In particular, a patient with an obsessional psychology always wishes to have everything ordered and simplified. To be possessed of a dissociated impulse, the origin, motive, and meaning of which he cannot understand, causes him acute discomfort and anxiety. An understanding of what is the matter and why it is the matter goes a long way towards allaying both his anxiety and his obsession. This applies also to the anxiety states, where the source of anxiety is unconscious. To know what we fear is bad enough, but not to know what we fear is infinitely worse. Fear that is finite can be fought and faced, but fear that is infinite and indefinite can never be overcome.

Treatment can be carried out by illustration, explanation, and interpretation, but to gain self-knowledge is not always to gain cure. For example, in the case of the man mentioned above who wished to be a woman, it was not sufficient for his cure to know that this was what he wished. His wish to be a woman must cease, or at any rate be modified to such an extent as to be compatible with the ordinary standards of manhood.

The difficult cases to cure are those who do not wish to give up their unconscious wishes when they become conscious. For example, a patient of 27 had spent his whole life contentedly attached to his mother's apron-strings, resorting to invalidism and self-pity when things got difficult. During the course of treatment he realised that what he wanted was a perfect opinion of himself and complete possessive intimacy with his mother, but even when he was conscious of the motive of his illness it still remained as what he wanted. There are many cases which present this difficulty, but a further step may be achieved by helping the patient to understand that even his mother is not the end in herself, but only a means to an end. She is, in fact, only a symbol of his wish for priority, security, and power. To the neurotic the end is always lost sight of in devotion to the means, because the means has become the symbol of the end. It was not really the possession of his mother that he wanted, but that he should be valued, that he should be safe, and that he should feel the strength of his power. These are not essentially neurotic goals. *It is the means by which they are sought, and with which they are confused, that are the characteristics of neurotic behaviour.* It should be possible for such a patient to see that these goals can have a real value and a possibility of real achievement, without necessarily expecting too much either of himself or of life.

SPECIAL ARTICLES

PUBLIC HEALTH IN LOCAL LEGISLATION.

OUR annual survey of recent Local Acts reveals the usual efforts of individual local authorities to improve upon the public health standards applicable to the country as a whole. Several novel clauses have been passed into law, and these will doubtless form precedents to be followed. The Report of the Local Legislation Committee, issued in the past autumn, draws attention in an appendix to various novelties. Unfortunately, the appendix is incomplete; it does not contain references to Scottish local legislation, and it omits such interesting innovations as the radium clause in the Kingston upon Hull Act. Moreover, though sufficient time elapsed between the beginning of August (when the session ended) and the publication of the report to bring the references up to date, the appendix inconveniently makes its references speak to the clauses as numbered in the Bill stage instead of the sections as finally numbered when the Bill became law.

One novel provision, for which Edinburgh seems to have furnished a precedent, concerns the nuisance of noise. A noise nuisance is deemed to exist where any person makes or causes to be made any excessive, unreasonable, or unnecessary noise, and where such noise is (*a*) injurious or dangerous to health, or (*b*) capable of being prevented or mitigated when regard is had to all the circumstances of the case. Newport, Bootle, and Stockton-on-Tees adopted the precedent but with a saving for trading interests, railways, &c., which may diminish its value. The local authorities concerned are empowered to deal with the noise nuisance as they deal with any other nuisance under the general public health law. At Hendon and Rotherham the sabbath calm is not to be broken by the noise of crying or bell-ringing to sell or advertise any article or commodity. This extends a provision against crying newspapers on Sunday which was already familiar—for instance in the Bognor and Chester Acts last year. Another new power concerns the supervision of private schools which a recent London prosecution suggested was inadequate. At Hull, by-laws may secure the proper heating, lighting, and ventilation of premises used as schools not maintained by the corporation, adequate washing and closet accommodation for the children, and facilities for drying their clothes. Interest in the young has prompted Liverpool to take power to regulate the hours of employment, meal intervals, holidays, and general welfare of young persons employed in errand work outside the Factory Acts. Welfare provisions at Cardiff extend certain general provisions (Section 72 of the Public Health Act, 1925) against food contamination so as to apply to rooms within the Factory and Workshop Act and to require adequate water-supply and, if the room is used for preparing food for sale, toilet soap and towels for employees. The supervision of food and food-supply has, of course, been a common feature of Local Acts. Noteworthy enactments in this respect in the past session include Section 59 of the Rotherham Act, forbiding the sale of meat within the borough unless the butcher, merchant, or dealer in meat is registered; no premises are to be used for this purpose unless also registered. Under Section 92 of the Bristol (No. 2) Act punishment awaits the seller of unsound food unless he proves that, at the time of the sale, he and his servants were ignorant of the unsoundness. The Cardiff Act (Section 108) enables the city to decide that nobody but a shopkeeper shall offer meat or "meat food product" for sale from a vehicle, basket, or barrow unless his storage accommodation has been approved and certified. Such accommodation will be registered and subjected to inspection by medical officer of health and sanitary inspector. There is no need to mention familiar clauses as to food storage in dwelling-houses, but Cardiff has now a direct provision that all future dwelling-houses must have a properly ventilated and fly-proof larder. Other usual food clauses are the power to take samples for analysis, the restriction on infected or tuberculous persons handling food, by-laws as to inspection of meat and transport of food, notification of slaughter of animals unfit for food, and prohibition of bringing inedible fats into premises where food is prepared. The accustomed ice-cream and potted meat clauses are frequent; the power to refuse or revoke registration of ice-cream manufacturers and sellers at Darlington, Bootle, and Southport is worth noting. Food poisoning is made notifiable by medical practitioners in 11 localities. Hull continues the national kitchen system, and the Morecombe and Heysham Order authorises municipal contribution towards tanks for cleansing or sterilising mussels.

As regards the treatment and prevention of disease, an interesting Hull provision allows the corporation to subscribe to any trustees or other body holding or supplying radium subject to terms and conditions as to the supply and use of the radium; the expenditure is not to exceed a penny rate. There is additional power at Hull to enable municipal supply to medical practitioners (with or without charge) of medicines, appliances, and requisites for surgical treatment; it seems that the practitioner need not be registered. Infectious diseases provisions as to removal of dead bodies, cleansing filthy premises and articles, compulsory information to the medical officer, furnishing of laundryman's name, notifying the head teacher of a school-child's infection, closing Sunday-schools and entertainments during an epidemic, and so on appear frequently as in former years. There are precautions against plumbism in water-supply, enactments relating to Rochdale, Stockport and Kingsbridge and Salcombe. Veterinary provisions to prevent insanitary conditions in stables go further in several places, and include a power to obtain a demolition order for stables and cowsheds where infectious or parasitic disease has appeared and the premises cannot be efficiently disinfected. The pigeon nuisance is dealt with at Hull and at Croydon.

Housing and drainage matters naturally receive special attention. Cardiff requires that new dwelling-houses must have not only the fly-proof larder already mentioned but also a secondary means of access to a street for removal of house refuse. The Bournemouth Act allows the corporation to provide on the occupier's request a galvanised iron dust-bin on agreed terms. Newport has a similar power with different arrangements for recovering the reasonable cost from the owner or occupier. Birkenhead requires sufficient room to be left near future public buildings, public garages, and warehouses, not only for the arrival of fire engines but also for the storage of dust-bins. To return to Cardiff, boats used for human habitation have there been linked up with tents, vans, or sheds. Such boats are not to be placed on land abutting on a street in advance of the building line, nor in a square, court, alley, or passage to which the public has access and which is required to be left free of obstructions; nor must such boats be placed or kept on land or water adjoining the foreshore without municipal approval, though canal-boats and vessels used for navigation are naturally excepted. At Birmingham, Liverpool, Birkenhead, and Wednesbury a working-class dwelling will be deemed not in all respects fit for human habitation if its owner fails to keep it sufficiently repaired and painted and the interior surface of its walls sufficiently papered or distempered with washable distemper of suitable quality so as to prevent dilapidation and secure reasonable amenities for the occupiers. As for drainage, the rural district councils of Epsom and Guildford, using their new powers under Section 55 of the Local Government Act, 1929, of promoting Bills, have obtained almost identical Acts which inter alia penalise anyone who without consent commences to erect a dwelling-house within 50 feet of a cess pool on land of which he is owner or lessee. The Birkenhead Act (Section 64) forbids the erection of a new building over a drain without consent. Cardiff enacts that anyone who seeks not merely to "reconstruct or alter" a drain (as in Section 39 of the general Public Health Act of 1925) but also to repair a drain must, except in emergency, give 24 hours notice in writing. Epsom and Guildford have taken power to prohibit erection of buildings meant for dwelling houses on land liable to flooding or unsuitable by reason of its subsoil; the restrictive order is subject to approval by the Minister of Health who may hold a local inquiry. Precautions against floods (through the prohibition or regulation of building on low-lying land) also appear in Section 5 and Part XII. of the gigantic consolidation of the London Building Acts on which the London County Council is to be congratulated. Mere amenities are perhaps not strictly a matter of public health, but it is clear that the restriction of advertisements is being tightened in many places, while at Epsom and Guildford trees are to be registered for preservation and protection almost as if they were ancient monuments.

This cursory and disconnected survey of the local legislation of the session 1929–30 gives no complete picture of the corporate activities of our local authorities in a session of exceptional activity in this respect. Ample material for study will be found in the official index to the Local Acts of the session published by H.M. Stationery Office (price 2*s.* 6*d.*) wherein the alphabetical entries range from "Aerodromes, &c., provision of" (at Portsmouth and Liverpool) to "Windows, size and height of" at Aberdeen. The report of the Local Legislation Committee recommends that many clauses which have become common in Local Acts in the past five sessions should now be caught up in a general adoptive Public Health Bill as was done in 1925, and that such a Bill should be introduced without delay. It would certainly be a convenience if the Bill could be passed into law in time for its incorporation in the restatement of public health enactments for which, as we mentioned recently, Lord Chelmsford's committee is to prepare the ground.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

THE SUPPLY OF NURSES.

FACTS about the distribution and availability of graduate nurses in this country have recently been gathered by the Committee on the Grading of Nursing Schools. They find that 54 per cent. of 24,389 graduate nurses who are still active in the profession are engaged in private duty nursing. This sample of nurses is taken from 10 States, and is believed to be representative of the more than 210,000 graduate nurses working in this country. Some 4000 doctors agreed that there is no shortage of nurses. However, the proportion of nurses to population is much less in the rural communities than in the cities. This is no doubt largely due to the greater wealth of city dwellers. The committee state that there is "a real need for the services of graduate nurses with high professional standards of nursing care" in these rural communities.

Since physicians stressed the need for good background and the ability to observe and report symptoms with accuracy, investigation was made into the background and education of American nurses. More than half (56 per cent.) have fathers born in the United States. Of the remainder, far the largest group are daughters of British-born fathers. Less than half of the nurses had completed the four years of high school before they entered the training school. About one-quarter had not passed beyond the first year of high school. Ten per cent. had one year or more of college education. Training schools are increasingly demanding a high school diploma at the present time as an entrance requirement. Even in times of prosperity many nurses are unable to find employment. The present depression finds a serious condition of unemployment.

MEDICAL HISTORY AT A UNIVERSITY.

A short time ago it was decided to add a department for the history of medicine to the Johns Hopkins University in Baltimore. Dr. William H. Welch, who held the chair of pathology in the University for many years with great distinction, was appointed head of this new department with the title of Professor of the History of Medicine, and a palatial library was built in his honour opposite the Johns Hopkins Hospital. The building consists of a large reading room and a fine conference hall in which hangs Sargent's well-known picture of the "Four Doctors." In the upper floor are book stacks, two small lecture rooms, librarian's room, and accommodation for research scholars, while among the book stacks themselves are alcoves for readers. Those engaged in research at the present time are Dr. John Rathbone Oliver and Dr. S. D'Irsay. The library is already well filled with journals and reference books for the history of medicine, and has been enriched by noble gifts from the libraries of Dr. Howard Kelly and other generous donors. It has been fortunate in obtaining the services as librarian of Colonel Fielding H. Garrison, who was for many years in charge of the Surgeon-General's Library at Washington. To inaugurate the library Sir D'Arcy Power, hon. librarian of the Royal College of Surgeons of England, was asked to visit the University in the months of November and December last. During his visit he gave formal lectures on the Principles of Medical Biography, Medical Bibliography, Medical Iconography, and on the growth of an English medical institution, taking the history of St. Bartholomew's Hospital as an example. He also gave a series of informal talks to small groups of students who were interesting themselves in the history of medicine. It will thus be seen that the study of history is becoming a well-recognised and well-endowed branch of medicine in the United States. Lectures are being given at Baltimore by Colonel Garrison and Dr. Oliver throughout the winter session and are attended in each case by classes of 30 to 40 students. The lectures are made practical by teaching students not only the history of the subject but the method of writing critical reviews of current works and biographies of medical personalities of all countries. Each student is allowed to select the subject in which he is specially interested and his essay is expected to show the *Quellen* with a bibliography. Dr. MacCallum, the professor of pathology, has already introduced a similar system in his department.

CRIMINALS AND MEDICAL SECRECY.

In a country where both private and police use of revolvers is still not uncommon, doctors are often confronted with gunshot wounds of questionable origin. Is it the doctors duty discreetly to cloak his curiosity and to take no notice of the nature of the injury apart from his professional care? The physicians of Essex County, New Jersey, believe not. They have voted to report to the police, immediately after treatment, all wounds which they suspect to be the result of criminal acts. Their resolution states that they regard this as a public duty on all fours with the reporting of contagious disease. The Department of Public Safety has agreed to regard such reports as confidential and to use them in evidence only with the consent of the doctor who makes the report.

MEDICAL ECONOMICS IN WEST VIRGINIA.

Some interesting figures have been produced by the West Virginia Medical Association, based on the results of a questionaire study of the incomes of its members. The highest income was $28,000 per annum. Two doctors reported this figure: one a surgeon and the other a general practitioner. The smallest income was $420—that of a physician in a rural community who has been in active practice for 24 years. The "average" West Virginia doctor collects 79 per cent. of his accounts. The average net income of a county general practitioner is $4396, and of the city general practitioner, $6528. The physician working under "contract" earns less—$4166. It was estimated that it requires at least three years for the young doctor to establish himself in the community. The 1500 doctors in the State collect ten million dollars yearly, of which eight million represent net income. Their charity work is valued at one and a half million dollars.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

THE HEALTH OF BELFAST.

THE Belfast annual report for 1929, which has lately been issued, shows a birth-rate of 21·4 per 1000 (22·5 in 1928) and a death-rate of 15·6 (14·0 in 1928). The increase of deaths is attributed to a severe influenza epidemic during the first quarter of the year, when the death-rate was 26·8. The mortality from cancer was 1 per 1000, and from pulmonary tuberculosis 1·16. Details are given of the end-results of pregnancy in 1869 tuberculous mothers. Ninety per cent. of them were delivered of a living child at full term, 2 per cent. of a dead-born child at full term, and 8 per cent. miscarried. Of 696 children born of 291 tuberculous mothers, 512 are healthy, 47 delicate, 11 tuberculous, and 126 are dead.

A study was made of the social condition of those who live in overcrowded conditions, and it was found that: (*a*) the overwhelming majority of people living in overcrowded houses or rooms were *employed*; (*b*) the rents were very low; (*c*) the wages were often —but not by any means always—poor. The deduction to be drawn from the economic point of view is that if the corporation builds houses for "the overcrowded" money will be dropped, for this type of worker will not go into more roomy houses except at a rent economically impossible.

A large part of the report deals with infant mortality, the rate for Belfast being 112 in 1929. More antenatal centres are required. Of 8987 expectant mothers, 1822 received attention at three hospital antenatal centres. It is not possible to state how many of the remainder received antenatal care from their private medical attendants, but the medical superintendent officer of health states that he is advised that probably 70 per cent. are not receiving antenatal examination and supervision. This serious state of affairs can only be met by educating people up to the great need there is for such attention. Future mothers as well as existing mothers should be taught mothercraft; the mother's is a skilled trade. Additional health visitors for maternity and child welfare work are required, and dinners should be provided for poor expectant mothers at various centres.

More than four-fifths of the daily supply of milk to the city is produced in farms outside the city, and over these dairy farms the officers of the city have no supervising powers. Of the milk sold in Belfast 4·1 per cent. of 875 samples were proved to be infected with tubercle bacilli. About 30 per cent. of the dairy cattle in Northern Ireland react to the tuberculin test. By adopting the legislation in force in England a more satisfactory method of dealing with milk-supplies would be found, and it is sincerely hoped that the Government of Northern Ireland will adopt or improve upon the Milk and Dairies Consolidation Act, 1915.

The annual report of the Registrar-General for Northern Ireland for 1929 shows a birth-rate of 20·4 per 1000 of the estimated population and a death-rate of 15·9. The death-rate from tuberculosis is still steadily declining, and is the lowest yet recorded; a slight increase in deaths from cancer is reported. Of the 25,410 children born, 2174 died under 1 year of age.

VITAL STATISTICS OF THE FREE STATE.

The annual report of the Registrar-General of the Irish Free State for 1929 estimates that the population of the State in the middle of the year was 2,946,000. The figure given by the census of 1926 was 2,972,802. There is an increase in the number of deaths as compared with 1928, and a decrease in the numbers of births, of marriages, and of emigrants. The deaths represented a rate of 14·59 per 1000 of the estimated population, the total number of deaths being 42,991. Of the causes of death heart disease is placed highest with 5616; tuberculosis next with 3875; followed by cancer with 3116; and influenza 1659. There has been an increase in the number of deaths by violence from 883 to 971; this increase is mainly due to two distinct causes—the increase of deaths from motor accidents, and an increased number of suicides. The total number of deaths from all forms of vehicular transport increased from 150 to 200, the number of suicides from 98 to 111. Up till recently suicide was uncommon in Ireland, but it appears to be taking a place among the considerable causes of death. The mortality from tuberculosis continued to show a gratifying decline. In 1919 the number of deaths from tuberculosis was 5839, and in 1929 was 3875, almost every intervening year showing a fall. The deaths from cancer are 74 fewer than in 1928. The infant mortality was 70 per 1000 births. The birth-rate shows a decline when compared either with the rate in 1928 or with the average in the ten years 1919–28. In the period 1911–15 the birth-rate was 24·9 per 1000 of the population; in 1924–28 it was 20·57; in 1929 it was 19·78. Illegitimate births constituted 3·2 per cent. of the total. The mortality among illegitimate children was appallingly high; no less than 29·4 per cent. died within the first year of life—a mortality more than four times the general infant mortality. The net emigration for the year —18,145—was the lowest on record, the average for the period 1911–26 being 26,946. Nevertheless, i was more than enough to counterbalance the natura increase of population, or excess of births over deaths

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BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

A DISCIPLE OF ZEILEIS.

ABOUT a year ago the Zeileis affair apparently ended with the acquittal of Prof. Lazarus of Berlin who published defamatory articles stating that th Zeileis method of treatment is devoid of scientifi foundation, that his diagnostic rod is an absurdity and that the whole business does nothing but mislea the suffering public and prevent them getting regula medical treatment which might cure their ailments Zeileis sued Lazarus before the Vienna Court, but th decision went against him and he had to pay costs But this verdict by no means put a stop to the mas migration to Gallspach, the nest of the "wonde doctor." It seemed that the number of his patient even increased, if we may judge by the fact tha early last summer the Zeileis Institute sent ou printed circulars to all inquirers telling them that a accommodation in Gallspach and the neighbourin towns and villages was booked until October. I fact, the Zeileis business enjoyed such a boom tha the old "master" found the time ripe to drain o his vast clièntele and establish branch offices i adjacent countries, where he appointed regularly qualified doctors who took a course of his method The latest institute has been opened in Budapes by Dr. Paul Tóth, a physician and also a Member o Parliament. His enterprise has caused consternatio in medical circles, and the board of the Medica Association has informed him that it does not hold it compatible with the vocation of a conscientiou physician to apply the so-called Zeileis method Dr. Tóth, replying in a daily newspaper, says hi conscience is clear. He has spent a long time in the Gallspach Institute, and the surprising results see there have made him a zealous adherent. Thousands and thousands, he says, owe their health, their life to the method, and in his opinion the help and cure of sufferers is what really matters and not the rationale of the treatment according to accepted scientific tenets. The Medical Association, which has no disciplinary right over its members except exclusion, will deal with the case at a special meeting.

A TREATMENT FOR LATE SYPHILIS.

At a recent meeting of the Budapest Royal Medical Society Dr. Ödön Rajka read a paper on the effect of light treatment and autohæmotherapy on cases of late syphilis which had already been subjected to "chemo-specific" treatment, but had persistently positive Wassermann reactions. His method, he said, was to give a course of 30 irradiations and 20 injections of blood taken from the patient's own vein half an hour after irradiation begins. The positive Wassermann reactions became negative in 57 per cent. of the latent or symptomless cases, and in 28 per cent. of those in which there were signs of damage to the nervous system. The reaction has so far remained negative for periods of 2–36 months, becoming positive again in about a third of the cases. The subjective symptoms improved in every case (41) of syphilis of the nerve and blood system. The tests were begun two years ago and remissions have varied from 1 to 19 months in length. There has been relapse in nine cases only, and of these four improved on a second course of treatment. The patients all felt better in general health, not only during but also after treatment. They slept and ate better, gained in weight, and became more vigorous. It is probable, Dr. Rajka says, that occasional courses of treatment will stabilise this improved condition.

AUSTRALASIA.

(FROM OUR OWN CORRESPONDENT.)

A REPORT ON HOSPITALS.

PERHAPS the most interesting part of the recent report of the Royal Commission on Hospitals in Queensland is the section on the finance of public hospitals. The Commission recommends the creation of a hospital fund by the collection of a special hospital tax of 1*d.* in the £1 on wages, salaries, and income, with exemption for people with not more than £1 per week. It is proposed that 80 per cent. of any deficiency between the estimated expenditure and estimated income of hospital boards should be paid from this fund, while the remaining 20 per cent. is found by local municipal or shire authorities. It is estimated that such a tax on the population of Victoria (900,000) would bring in about £260,000 a year. In 1928–29 the total annual expenditure of both district and voluntary hospitals in Queensland was £668,596, while their receipts amounted to £258,632, leaving a deficit of £409,964 to be provided from taxation and other sources.

The number of public hospitals in the State is 118, with 4229 beds. Under the Hospitals Acts of 1874 to 1891 the 74 voluntary hospitals receive a Government subsidy of £2 for every £1 obtained from voluntary contributions. (This rate has recently been reduced to £1 15*s.* to £1.) The 44 "districted" hospitals are governed by the Hospital Acts of 1923 to 1929 and include most of the larger institutions. Sixty per cent. of their deficiency between estimated expenditure and estimated receipts is made up by Government grant and 40 per cent. by the local authorities who levy a special hospital tax on the unimproved capital value of the land in their area. This hospital tax the Commission regards as inequitable. The effect of direct taxation in drying up voluntary subscriptions was carefully considered but, while recommending with reluctance any interference with philanthropy, the Commission thinks that the present injustice should not be allowed to continue, and points out that in any case benevolence, as far as hospitals are concerned, is rapidly dwindling. The necessity for stability of hospital finance is all-important.

Friendly Societies.—It was realised that the friendly societies members, by contracting for domiciliary medical service, relieve to a large extent the pressure on the public hospitals. It was also realised that, if a wage tax were imposed, members of friendly societies would have to bear a double burden, and to overcome this the Commission recommends provisionally that members of these societies be provided with intermediate ward accommodation at the rate of 9*s.* per day which is the maximum charge for public wards. They would have the right of attendance by their own doctor in the hospital.

Central Hospital Commission.—The Commission has come to the conclusion that hospitals throughout the State could be most effectively managed by a central hospital commission consisting of three members, including a permanent full-time chairman. Among other duties it would make a hospital survey of the State, coördinate the hospital system, standardise hospital expenditure, and make more effective the combined activities of the health department and the public hospitals.

Intermediate and Private Hospital Accommodation.—Although in agreement with the establishment of intermediate wards in public hospitals wherever the conditions are favourable, the Commission thinks that hospital authorities should concentrate on the efficiency and adequacy of their public ward accommodation before contemplating the introduction of intermediate wards. To such wards patients would be admitted on payment of the full charge for maintenance and nursing attendance. The wards should be under the control of the medical superintendent; but the patients would have the right to choose their own medical attendant and make their own arrangements about his fees.

Contributory Schemes.—A source of income which has been of great value to hospital boards throughout the State has been the group contributory schemes, whereby for 6*d.* or 1*s.* per week the contributor and his dependants are provided with hospital accommodation when required. The Commission recommends that such schemes should be encouraged. In order to prevent abuse of the scheme, it is suggested that the income limit for single men or women should be £260 per annum and for a married man £340 per annum. The main difficulty with these schemes from the point of view of the medical man is that while the hospital service is thus contracted for, no definite statement is usually made about medical attendance, and most contributors are under the impression that the weekly payment entitles them to free medical attendance in hospital as well. Such a misconception has been the cause of a certain amount of unpleasantness, but with a strict control of the income limit and a clear statement to the contributor as regards medical attendance, the extension of the group system should be satisfactory.

Medical Representation.—It is proposed that a doctor, disassociated from the public service, and nominated by the medical profession in the area, should be appointed to the boards of hospitals in Queensland of more than 100 beds.

Infectious Diseases.—At present the whole financial burden of the treatment of infectious diseases is placed upon local municipal or shire authority. It is considered that the outlook has been much altered in late years by the appreciation of the influence of "carriers" on the spread of infectious diseases. In years gone by, when these arrangements were made, it was held that the chief causes of the spread of infectious diseases were faulty sanitation and cleansing. The Commission now recommends that infectious diseases should be a charge on hospital boards. Local authorities will be subject to their proportion of the local hospital boards deficit, and this, it is thought, should be a sufficient monetary liability to guarantee the area being kept clean.

Nursing.—In the interests of patients and to facilitate the training of nurses, it is proposed that the hours of duty of the nursing staff should be increased from 44 hours per week to 48 hours per week, exclusive of meal hours.

Patients' Visitors.—As an unobjectionable method of raising money, the Commission suggests that each visitor to the patients in the wards, in excess of two, should be required to contribute 6*d*. On admission to the hospital, the patient is given two free passes which he can give to his relatives or friends. Any visitors beyond this number are charged. This system has been in use in the Victorian public hospitals for many years. The Melbourne hospital (590 beds, including the convalescent hospital) derives a yearly revenue of over £4500 from this source.

MEDICINE AND THE LAW.

Doctor and Barrister: No Fusion.

THE annual statement of the Bar Council contains, as usual, a summary of the rulings given during the past year on questions of professional etiquette affecting barristers. A member of the medical profession, it seems, asked the opinion of the Bar Council on the following question. If called to the Bar, would he be allowed to practise as a barrister while continuing his existing practice in the medical profession? The Council in reply referred to the principle that a practising barrister should not, as a general rule, carry on any other profession or business; they grimly added that, whatever might be the exceptions to this general rule, the case under consideration would not be an exception to it.

The known disinclination of the Bar to allow its members to practise any other vocation is illustrated by another ruling in the annual statement. A barrister who is also a rating surveyor and valuer sent out circulars on letter paper on which he was described as "Rating Surveyor and Valuer, Barrister-at-law," inviting persons to employ him on appeals against their assessments. This was a threefold breach of professional etiquette. First, a practising barrister should not also practise as a surveyor and valuer; secondly, he must not print the words "barrister-at-law" on his note-paper; and, thirdly, he must not ask for work. The Bar Council remarks that, as letters addressed to the offender failed to obtain an answer, the matter was reported to the Bench of his Inn. This incident shows how easily the traditions of the Bar can be embarrassed by association with some other calling. The medical and legal professional standards are, of course, similar as respects advertising and touting, but there are a few practical differences which might cause awkwardness in the event of an attempted fusion of the two vocations. The Bar does not allow its practising members to state after their names on the doors of their chambers in the Inns of the Court even the rather scanty references to professional qualifications which are permitted on the doctor's brass plate. The Bar does not allow partnerships. The barrister is immune from actions of professional negligence. *The double qualification (in both medicine and law)* is naturally of great value to a man practising either medicine or law. Indeed, Parliament may some day enact that all coroners should possess this duplicate training. But the Bar will not allow the practising medical practitioner to practise also as a barrister, though it is not clear that the General Medical Council would object in the converse case.

Proof of Relationship.

The objection to the admission of hearsay evidence is a well-known feature of English law. Sometimes however, necessity compels a compromise with the principle. In criminal proceedings before Mr. Justice McCardie at the end of last year, it was essential for the prosecution to prove that two persons were brother and sister. The prosecution tendered the evidence of a witness who said he had always regarded them as such. Counsel for the defence objected that this was mere hearsay and must be rejected. The judge admitted the evidence. To hold it hearsay, he is reported to have said, would be to destroy all the laws of evidence. A man could not know his mother because he could not personally remember his own birth; a father would not be able to say "this is my son" unless he had been present at the birth. In spite of these judicial dicta, it might be more frank to say that such evidence is admitted of necessity because the facts cannot otherwise be established. In genealogical cases the evidence of entries in the family Bible or of tombstone inscriptions is admitted partly on the ground that publicity supplies the want of connexion between the entry or inscription and the particular individual. There is a presumed absence of any interest to misrepresent the truth; it is also presumed that the person who made the entry or ordered the inscription had peculiar means of knowing the facts; in the background somewhere, too, there is probably the feeling that a decision on the available information is necessary and that the information is not available in any other form. But such information will not be allowed as evidence on a question of relationship in non-pedigree cases—e.g., on the question whether two persons are brother and sister under Section 3 of the 1908 Act for the punishment of incest.

ENLARGEMENT OF CHIPPENHAM HOSPITAL.—Last week Lady Margaret Spicer laid the foundation-stone of an extension of this cottage hospital which is to cost about £5000. The enlargements include new men's and women's wards, of eight beds each, two private wards, nurses' quarters, an anæsthetic room, and improvements in the theatre.

EXTENSION OF NEWCASTLE VICTORIA INFIRMARY.—Sir Walter Runciman last week opened a new "Runciman Wing" of the nurses' home at this hospital and announced his gift of £25,000 to the appeal fund of the institution. The wing provides accommodation for 150 nurses. The extension fund, to which Sir Walter Runciman had already given £50,000, had previously reached £113,000. The entire cost of the scheme is estimated at £164,000.

THE DISTRIBUTION OF RADIUM.

I.—IN LONDON.

King Edward's Hospital Fund has at its disposal 10 grammes of radium to lend to London hospitals; nearly one-half of this was the gift of the late Sir Otto Beit, the remainder being purchased through special donations and through money received from the National Thank-offering Fund earmarked for radium. Four grammes were distributed among twenty hospitals during 1929 and by arrangement with the National Radium Trust 4 more grammes have been exchanged for their equivalent in the form of a "bomb," which is on loan with the Westminster Hospital. Last autumn a further allocation of 2 grammes was made among seven hospitals as follows:—

	Milligrammes.
Westminster Hospital	250
St. Bartholomew's Hospital	450
Middlesex Hospital	370
London Hospital	250
Marie Curie Hospital	250
Royal Free Hospital	200
Chelsea Hospital for Women	100

making a total of 1870 mg. and leaving 130 mg. as a margin required by suppliers. Three of these hospitals had participated in the previous distribution to twenty hospitals and four had not. Of these allocations 950 mg., in addition to the "bomb," have already been delivered to the hospitals concerned, while specifications have been received for nearly the whole of the balance. Summarised briefly, the position is that 10 grammes have been allocated among twenty-four hospitals, and 9 grammes have been delivered and are in use at twenty-three hospitals.

The following is the list of the twenty-four participating hospitals:

A = Amount of radium allotted by King's Fund.
B = Amount of radium held by these hospitals, including King's Fund allotment (approx.).

	A	B
	Milligrammes.	
Hospitals with Medical Schools:		
Charing Cross Hospital	250	250
Guy's Hospital	500	500
London Hospital	250	2,000
Middlesex Hospital	870	1,900
Royal Free Hospital	200	700
St. Bartholomew's Hospital	450	2,000
St. George's Hospital	150	350
St. Mary's Hospital	150	300
St. Thomas's Hospital	150	500
University College Hospital	500	700
Westminster Hospital	4,250	5,000
Other General Hospitals:		
Prince of Wales's General Hospital	150	150
Queen Mary's Hospital for the East End	150	150
Royal Northern Hospital	150	250
West London Hospital	150	150
Special Hospitals:		
Central London Throat, Nose, and Ear Hospital	100	100
Chelsea Hospital for Women	200	350
Elizabeth Garrett Anderson Hospital	150	150
Golden Square Throat, Nose, and Ear Hospital	150	150
Hospital for Women	100	250
Marie Curie Hospital	500	700
St. Mark's Hospital for Fistula	100	250
Samaritan Free Hospital for Women	100	350
South London Hospital for Women	150	150
	9,870	18,850
Margin required by suppliers	130	
Total King's Fund Radium (mg.)	10,000	

The total amount of radium available at the voluntary hospitals in London is, of course, in excess of the figure given above.

In the allocation of radium the Distribution Committee of King Edward's Fund had regard to the competence of the staffing and equipment of the hospitals concerned, preference being given to those in which the cure of disease was associated with keen interest in the furtherance of knowledge. Reasonable provision having been made at the first allocation for general and urgent needs, more weight was given at the second to the policy of concentration at radium centres.

II.—IN THE PROVINCES.

In August, 1930, when the Radium Commission presented its first annual report, a total of 18 grammes of radium had been provisionally allotted to national centres, although only 8 grammes had been actually delivered. It was, however, anticipated that the whole 18 grammes (including the 4-gramme bomb) would be in full clinical use by the end of the year. Of this amount 4 grammes was allotted to the National Post-Graduate School thus:—

Mount Vernon Hospital (for clinical work)	3 grammes
Radium Institute (for radon)	1 gramme

Distribution of the remaining supply of radium has been restricted to 7 centres in England, 4 in Scotland, and 1 in Wales, which possess a University with a medical school and complete clinical courses, and in which one hospital nominated by the local medical faculty has been recognised as a national centre. When the report named was issued the distribution to these centres had taken effect as shown in the following Table:—

National radium centres.		Milligrammes of radium.			
University.	Approved hospital.	Previously in hand.	From Radium Commission.		Total from all sources.
			Received.	To come.	
Aberdeen.	Royal Infirmary.	250	250	500	1,000
Birmingham.	General Hospital.	600	950	500	2,050
Bristol.	Royal Infirmary.	176	—	1,500	1,676
Cardiff.	Royal Infirmary.	115	500	—	615
Dundee.	Royal Infirmary.	586	500	—	1,086
Edinburgh.	Royal Infirmary.	600	500	900	2,000
Glasgow.	Western Infirmary.	300	705	1,295	2,300
Leeds.	General Infirmary.	500	—	700	1,200
Liverpool.	Royal Infirmary.	Not stated.	—	1,000	1,000 plus.
Manchester.	Royal Infirmary.	Not stated.	770	980	1,750 plus.
Newcastle.	Royal Victoria Infirmary.	Not stated.	325	835	1,160 plus.
Sheffield.	Royal Infirmary.	334	—	665	334
—	—	3,461 plus.	4,500	8,875	10,671 plus.

At four centres—Aberdeen, Birmingham, Bristol, Newcastle—500 mg. of the radium is to be used for making radon.

ROYAL AUTOMOBILE CLUB HOSPITAL FUND.—About 18 months ago this club established a fund for the benefit of hospitals which deal with a large number of cases arising out of motor accidents. Since the Road Traffic Act now makes it obligatory for insurance companies to pay to hospitals a sum not exceeding £25 in cases where a third party has received treatment following a motor accident the fund has been wound up and the balance in hand divided among the hospitals which had been benefiting by the arrangement.

PUBLIC HEALTH SERVICES

SCHOOL MEDICAL SERVICE IN IRELAND.

THE establishment of a school medical service[1] was authorised in Ireland in 1919, but its inauguration has been delayed until it could be combined with the appointment of county medical officers of health so that the chief school medical officer and the medical officer of health should be one and the same person. This policy has been justified and has secured continuity of treatment for the child from infancy until it leaves school.

Medical inspection is now in operation in Dublin and Cork County Boroughs, Clonmel, and in the counties of Cork, Kildare, Offaly and Louth, and it is to be started in many of the other counties as soon as possible. It has revealed a high rate of decaying teeth, enlarged tonsils and adenoids, and defective vision, but less crippling and tuberculous deformity than was expected. Dental caries was noted in more than half the children examined; enlarged tonsils and adenoids in 18 per cent., and defective vision in 11 per cent. Defects of eyes, ears, teeth, and throat and minor ailments are treated under the scheme; full use is made of existing facilities in hospitals. Orthopædic treatment is not at present an integral part of the scheme but special attention is given to the correction of deformities.

A somewhat high percentage of uncleanliness was found, but in Cork county borough, where a scheme of school medical service has been in operation for six years, the figure dropped from 20·3 per cent. in 1926 to 12·9 per cent. in 1928, while the percentage of under-nourished children is also steadily diminishing. This improvement is attributed to the work of the school nurses in educating parents and following up children treated for septic teeth and tonsils. It has been found that in county areas this work can best be done through the agency of the District Nursing Association. The nurse from this body has known the child from its infancy and has already gained the confidence of the parents. There are now 140 nurses affiliated with the Queen's Institute of District Nursing, and new districts are being opened up.

On the whole the hygienic condition of the schools is below the standard desired, and the equipment is often found to be obsolete. Hot midday meals are provided at an increasing number of schools.

MENTAL HOSPITAL REPORTS.

THE *East Sussex County Mental Hospital* at *Hellingly* had 1255 patients on its books on the first day of last year. The recovery-rate was 38 per cent., a distinct improvement on the previous year, and the death-rate 7·98 per cent. Post-mortem examinations were made in 70 per cent. of the cases. Of the 141 patients discharged during the year, 48 were sent out on trial before discharge, and 29 of these had a money allowance. The Mental After-Care Association has, as usual, done invaluable work for the discharged patients. The system of parole has been extended; 9 men are allowed out of the grounds and 53 men and 129 women are free within the estate. There was a severe epidemic of influenza in the spring, followed by 29 deaths from pneumonia. There were 11 cases of dysentery, some of which were only diagnosed bacteriologically. Four patients died of general paralysis; three of them had been treated with malaria but it had always been doubtful whether they were not too advanced for the treatment to be any good. The ophthalmic and dental surgeons attended regularly, and six major operations were performed. Special attention has been given to occupational therapy and classes are held in almost all the female wards. An attempt has been made to ameliorate the condition of the post-encephalitics, but without much result. Malarial treatment has been continued and a summary of the results is published in this report. The pathologist puts forward a special report of his routine work, public health work for the county, and research work. He discusses uræmia as a cause of death in the insane. He says that he has come to the conclusion that the mental patient is insane because his bacterial resistance is low, and he therefore stresses the importance of treating focal sepsis. There has been an increase in attendance at the out-patient clinic at Eastbourne, 32 new patients having been seen during the year. There is still a shortage of nurses, although everything possible is done to make the staff happy and comfortable. Two nurses passed the State examination and four attendants and eight nurses obtained their R.M.P.A. certificate, for which training is compulsory at this hospital.

At the *Inverness District Asylum* there were 749 people on May 15th, 1930. The recovery-rate for the year was 37 per cent. and the death-rate 7·5 per cent. The general health was good except for ten cases of scarlet fever in the autumn. The institution is overcrowded and the sleeping accommodation for nurses is inadequate. The medical superintendent discusses the future of the asylum in a memorandum and urges the provision of a nurses' home, which would make it possible to provide such essentials as dental and actinotherapy departments, and an isolation hospital. Farm and garden gave a good yield, in addition to providing occupation for many of the patients. During the year three nurses and one attendant gained the R.M.P.A. certificate.

The *Stirling District Board of Control* had 987 certified and 25 voluntary patients in residence on May 14th, 1930. The recovery-rate was 37·3 per cent. and the death-rate 8·4 per cent. Sixteen patients were sent out on trial before discharge. Acute mental ailments preponderate among the admissions and are treated on the verandahs of the reception hospital. The steadily increasing admission-rate is giving rise to some anxiety as to accommodation. The health was good throughout the year, except for some mild influenza. General paralysis was treated by induced malaria and by tryparsamide. In the electrotherapeutic department 136 patients were treated and 26 more had diagnostic X rays. The dental surgeon visits weekly and submits a report of the 218 patients he examined. Occupational therapy is enthusiastically carried on, and the dairy, farm, and garden provide outdoor employment as well as milk, vegetables, and fruit to improve the dietary. The laundry has been brought up to the most modern standard. During the year six nurses and four attendants obtained the R.M.P.A. certificate

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 3RD, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 164 (last week 135); scarlet fever, 1854; diphtheria, 1430; enteric fever, 29; pneumonia, 1757; puerperal fever, 43; puerperal pyrexia, 101; cerebro-spinal fever, 19; acute poliomyelitis 3; acute polio-encephalitis, 2; encephalitis lethargica, 9; continued fever, 1; dysentery, 25; ophthalmia neonatorum, 97; and plague, 1. (Port of Bristol.) No case of cholera or typhus fever was notified.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 6th–7th was as follows: Small-pox, 224 under treatment, 4 under observation (last week 218 and 3 respectively); scarlet fever, 1688; diphtheria, 2013; enteric fever, 18; measles, 83; whooping

Continued at foot of opposite page.)

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[1] Report of the Department of Local Government and Public Health of the Irish Free State for 1929. Government Publications Sale Office, Dublin. Pp. 252. 2s. 6d.

CORRESPONDENCE

A RESEARCH INSTITUTE FOR SURGEONS.

To the Editor of THE LANCET.

SIR,—With reference to your leading article of Jan. 3rd we should like to call attention to the fact that while England may lack an institute where surgeons can carry out experimental research bearing on their art, this does not apply to Scotland. In Edinburgh University, the surgical unit under Prof. D. P. D. Wilkie is equipped precisely for such work as is referred to, and for several years a large team of surgeons has been engaged in solving surgical problems by work carried out simultaneously in the wards of the Royal Infirmary and the experimental laboratories of the surgical research department of the University. We have been frequently told by leading surgeons from abroad that this centre for surgical research is one of the greatest in the world at the present time.

We are forwarding this letter because we believe that your readers should be made aware of these facts. We are, Sir, yours faithfully,

STANLEY DAVIDSON, B.A., M.D., F.R.C.P.,
Regius Professor of Medicine, University of Aberdeen.
J. J. R. MACLEOD, M.B., D.S.C., F.R.C.P., F.R.S.,
Regius Professor of Physiology, University of Aberdeen.

Physiology Department, Marischal College, Aberdeen.
Jan. 8th, 1931.

CŒLIAC DISEASE.

To the Editor of THE LANCET.

SIR,—Prof. Leonard Parsons is in slight error in ascribing to me the suggestion that cœliac disease may be due to obstruction of the lacteals by *tuberculous* disease (THE LANCET, Jan. 10th, p. 64). In my paper on Fatty Stools from Obstruction of the Lacteals[1] to which he presumably refers, my conclusion was that "the inability to absorb fats in cœliac disease, and the attendant complications, such as infantilism and tetany, can best be accounted for by an obstructive lesion (probably infective in origin, as the disease is acquired and not congenital) of some part or parts of the lacteal tree." I did not suggest that the infection was tuberculous. I still think that this hypothesis is a very reasonable one, and the more so because it is now generally agreed that the disorder is one of absorption and not of digestion, and because no disease of the only other part of the absorptive system (namely, the intestinal mucosa) has been demonstrated. In the paper referred to I drew attention to the remarkable resemblance in the clinical symptoms and stool analyses in patients suffering from cœliac disease, sprue, and tabes mesenterica with obstruction of the lacteals, and described two cases of the last-named condition in which the lacteals were shown in the course of a laparotomy to be enormously over-distended with chyle. In all three of these conditions we have abdominal distension, bulky fatty stools, similar fæcal analyses, tetany, and other evidences of calcium deficiency.

At first, I believe, physicians for tropical diseases (like the pædiatrists in the case of cœliac disease) were unwilling to accept my hypothesis that an inflammatory obstruction of the lacteals was a part of the pathology of sprue. I was greatly interested, therefore, by a letter from Colonel Davenport Jones[2] in which he described, quite independently, the same distension of the lacteals seen by him during laparotomies for appendicitis in two cases of tropical sprue. This over-distension of the lacteals with fat is presumably an affair of active life when more or less normal food is being ingested. The failure to discover it at necropsy is of no significance. Someday a case of cœliac disease will develop appendicitis, and then I shall not be surprised to learn that the lacteals were found to be over-distended with fat droplets just as they have been shown to be in occasional cases of tabes mesenterica and sprue. In the meantime no fatal case of cœliac disease can be regarded as having had a full investigation unless this includes a careful inspection and microscopical examination of the thoracic duct, the receptaculum chyli, the lacteals, and the mesenteric glands. I am not convinced that a successful injection of the system after death with methylene-blue and in a reverse direction can be held as proof of its functional efficiency during life. The morbid anatomy of the living is sometimes very eloquent.

I am, Sir, yours faithfully.

Wimpole-street, W., Jan. 11th, 1931. J. A. RYLE.

ACUTE MYELOGENOUS LEUKÆMIA.

To the Editor of THE LANCET.

SIR,—Dr. Knyvett Gordon pleads for the publication of more cases of acute myelogenous leukæmia. Here is one which has just been under my care at the London Hospital.

The patient, a married woman of 35, previously of good health, was admitted suffering from profuse hæmaturia which had set in suddenly and without pain three days before. Coincidentally with this bruises had appeared on the legs. On examination she was pale but did not seem very ill and the temperature was only slightly elevated. The urine was full of blood and there were large bruises and a few petechiæ on the legs. The mouth and pharynx showed nothing abnormal and the spleen and superficial glands were not palpable. The blood contained 4,000,000 red cells per cubic m.m., 65 per cent. of hæmoglobin, and 82,000 white cells, of which 80 per cent. were myeloblasts. She went rapidly downhill. The

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[1] Guy's Hospital Reports, 1924, lxxiv., 1.

[2] THE LANCET, 1924, ii., 525.

(*Continued from previous page.*)

cough, 125; puerperal fever, 24 (plus 7 babies); encephalitis lethargica, 120; poliomyelitis, 2; "other diseases," 57. At St. Margaret's Hospital there were 15 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were no deaths from small-pox, 3 (1) from enteric fever, 62 (1) from measles, 16 (8) from scarlet fever, 26 (3) from whooping-cough, 43 (5) from diphtheria, 53 (10) from diarrhœa and enteritis under two years, and 60 (11) from influenza. The figures in parentheses are those for London itself.

As in the previous week, there were 17 deaths from measles at Liverpool. Hull reported 11, Bristol, Birmingham, and Newcastle-on-Tyne 4 each, and Rhondda and Swansea 3 each. Eight fatal cases of diphtheria were reported from Liverpool, 3 each from East Ham and Birmingham, and 2 each from Leyton, Portsmouth, and Hull. Diarrhœa caused 7 deaths at Manchester, 4 at Liverpool, and 3 at Birmingham.

The number of stillbirths notified during the week was 311 (corresponding to a rate of 42 per 1000 births), including 50 in London.

temperature rose higher, the liver became considerably enlarged, and the spleen palpable. The mouth and pharynx remained normal, but profuse hæmorrhage from the urinary tract continued and she died five days after admission or just eight days from the onset of the illness.

I agree with Dr. Gordon that sepsis is a result and not a cause in this disease and the absence of any signs of it in the above case bears out this view.

I am, Sir, yours faithfully,
ROBERT HUTCHISON.
Devonshire-place, W., Jan. 10th, 1931.

TREATMENT OF LOBAR PNEUMONIA.

To the Editor of THE LANCET.

SIR,—In view of the interest aroused by the reports on the serum treatment of lobar pneumonia (THE LANCET, Dec. 27th, 1930, pp. 1387 and 1390), one of which emanated from Glasgow, it has seemed to me worth while to make a note on a series of untyped pneumonias, treated on orthodox non-specific lines.

The cases under review are those treated in a ward reserved for male pneumonia, and which receives all cases over 6 years of age. They comprise all such cases admitted during the calendar year 1930, which proved to be true lobar pneumonias. In all 233 cases were treated, and out of that number there were 37 deaths—a case-mortality of about 15·9 per cent. An analysis of these 37 deaths shows that 29 patients died from the usual complications—viz., failing heart and anoxæmia. One of them had a bilateral lesion. Of the remaining eight patients, three were known to have chronic chest trouble, two were operated on for empyema, one had a pleurisy, one died in delirium tremens, and one had a pericarditis. Six of the cases that died were in hospital, on an average, only 27 hours.

The subjoined table shows the age-groups of the cases, and the mortality in each group.

Age-group.	Total cases.	Total deaths.	Case-mortality per cent.
7–9	30	0	—
10–19	64	2	3·1
20–29	47	3	6·4
30–39	25	6	24
40–49	34	10	29·4
50–59	17	8	47
60–69	11	4	36·3
70 over	5	4	80
Total	233	37	15·88

These figures may be of value in making comparisons with cases treated with serum.

I am, Sir, yours faithfully,
TOM ANDERSON, M.B., Ch.B.,
Senior Assistant Physician, City of Glasgow Fever Hospital.
Jan. 10th, 1931.

SODIUM AMYTAL IN LABOUR.

To the Editor of THE LANCET.

SIR,—With reference to the two notes which have recently appeared in your columns (Nov. 15th, 1930, p. 1086, Jan. 10th, 1931, p. 92) on the employment of sodium amytal in labour, although I have only used it in eight cases I have come to the conclusion that there are other and better methods of mitigating the pains of labour and I do not propose to test the product further. In one case grs. 9 was given in divided doses of grs. 3 in capsules by the mouth. The patient was noisy, restless, and difficult to control. She had no remembrance of this. Chloroform was administered for the birth of the head. In two cases the second stage was definitely prolonged as a result of the administration of sodium amytal grs. 6 in divided doses at intervals. In another case which received grs. 6, three one day, and three the next at 10.30 A.M., the child was stillborn at 3 P.M. The amytal may have been to blame. Labour was unassisted and natural.

I prefer to use morphine and nitrous oxide gas or rectal avertin. Patients are thankful for avertin which produces amnesia. Except in one case with sodium amytal amnesia was not produced. She was unsatisfactory as described above. The others were quiet but remembered everything, except the final stages for which chloroform was used.

I am, Sir, yours faithfully,
JAMES RIDDELL.
Plymouth, Jan. 10th, 1931.

TREATMENT OF QUINSY BY LAUGHTER.

To the Editor of THE LANCET.

SIR,—Dr. Croft's note in your last issue is interesting in that it gives an actual case of recent occurrence of a phenomenon described in many anecdotes of noted people. Laughing as an accidental cure in quinsy is found mentioned by more than one writer, the most notable instance that occurs to me being the case of Cardinal Mazarin, whose quinsy broke when he laughed heartily at the antics of a monkey seated at the end of his bed. In Webster's "Duchess of Malfi" (iv. 2) occurs the following passage:

> A great physician, when the Pope was sick
> Of a deep melancholy, presented him
> With several sorts of madmen, which wild object
> Being full of change and sport, forced him to laugh,
> And so the imposthume broke.

It is possible that this Pope's case was one of quinsy. I am, Sir, yours faithfully,
MACLEOD YEARSLEY.
Wimpole-street, W., Jan. 11th, 1931.

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—It was with real interest that I read Dr. Macfie's letter. My experience has been that many medical men who have not had the time or opportunity to visit Certified or Grade A (tuberculin tested) dairy farms can be divided into two classes: those who think that the whole movement is Utopian, and those who frankly state that they do not believe that, except on occasions, the quality of the work is maintained. In this way in this country the sanatoriums and hospitals have hindered the clean milk movement, but in Scotland a very different story can be told.

While it is true in certain cases that the bacterial standard (involving non-pathogenic organisms) of Grade A (tuberculin tested) milk has not been maintained, it is equally true that failure has been due to lack of efficiency in carrying out the work and not to its impossibility. There can be no question that it is possible to deliver fresh milk from tubercle-free herds of a high standard of bacterial cleanliness, even in the east end of London. Proof of this statement is found in the fact that some 400,000 gallons of such milk were sent to London quite successfully last year. Some of this milk goes to St. Bartholomew's Hospital, which has now been taking it for a number of years, but the greater part is purchased by the poor people living in Bermondsey. I am sure that Dr. D. M. Connan, the M.O.H. of Bermondsey, or Dr.

Ralph Picken, the M.O.H. of Cardiff, will be glad to give Dr. Macfie any information they can of the success or otherwise of the sale of this milk in their districts.

Those who regard pasteurisation as the solution of the whole milk problem must give more consideration than is generally the case to the following points. (1) Evidence is steadily accumulating that our nation is not being nourished as efficiently as we would like. (2) There is a great deal of work which tends to show that the nutritional value of raw milk is greater than that of milk which has been treated. (3) Statistics concerning the incidence of disease must be derived only from the country in which the problem is being considered, since public health conditions in different countries vary very considerably. (4) There is no doubt that a national policy of encouragement for the sale of fresh milk free from disease would be of inestimable benefit to the dairy farmer and veterinary profession. (5) The mere fact that in Berkshire alone there are some 40 or more herds regularly tested with tuberculin is a clear demonstration that the dairy farmer is anxious to do his work to the very best of his ability. It must be remembered that all these farmers have to bear the whole cost of clearing their herds of tuberculous animals, maintaining them clear, and, in addition, have had not only to bear the cost of altering their cowsheds and dairies to enable them to produce clean milk, but also must pay for the privilege of supplying it. They have to create their own market in face of very considerable difficulties, some of which are certainly due to the apathy of the medical profession and the undoubted opposition of some members of the milk industry who prefer to pasteurise or otherwise treat, for the sake of convenience, all their milk-supply.

That pasteurisation offers no encouragement to the producer is clear from a very human remark I once overheard when two licensed producers who did not know me were conversing in an interval of a meeting. The one was dilating on the extreme care he took over every detail on his farm. The other replied, "Yes, I used to do the same, but now I sell to a firm who pasteurises all my milk, so now I need not trouble in the same way."

I am, Sir, yours faithfully,

C. MADDOCK,

Hon. Secretary, The Certified and Grade A (Tuberculin
Tested) Milk Producers' Association.

Foxglade House, Shinfield, Reading, Jan. 12th, 1931.

CLINICAL CONDITIONS ASSOCIATED WITH ACHLORHYDRIA.

To the Editor of THE LANCET.

SIR,—In their interesting paper in your last issue Dr. J. F. Wilkinson and Dr. T. H. Oliver say that I regard achlorhydria as a common factor in the production of cancer of the stomach. I have never made such a statement. On the other hand, if they will read my Schorstein Lecture,[1] they will find abundant evidence that chronic gastritis is a common precursor of cancer of the stomach, and that the achlorhydria found in 60 per cent. of cases of the latter is not secondary to the cancer but is a result of the chronic gastritis which preceded it. This is one reason why I regret that Dr. Wilkinson and Dr. Oliver have not distinguished between achylia gastrica and achlorhydria. Achylia is generally due to an inborn error of secretion and is often familial, but it may also be caused by severe gastritis, which has led to destruction of the oxyntic cells of the stomach. Achlorhydria includes achylia, but also the much larger group of cases in which the absence of free acid is due to chronic gastritis and in which no permanent damage has been done to the mucous membrane.

In achylia gastrica the correct treatment is the administration of 1 to 2 drachms of dilute hydrochloric acid three times a day, but in the achlorhydria secondary to chronic gastritis this treatment is bad, as, though it may relieve the symptoms, it has no effect on the underlying condition, so that recurrence of symptoms occurs directly no more acid is taken, and malignant degeneration of the inflamed gastric mucous membrane may develop at some future period. The correct treatment is to remove the cause, the most common being septic foci in the mouth, throat, or nose, alcoholic excess, and to a less extent indigestible food and insufficient mastication. At the same time the stomach should be washed out every morning with dilute hydrogen peroxide (1 drachm to the pint) till no more mucus is present. This treatment, which results in the restoration of a normal gastric secretion and the cure of the primary gastritis, should always be undertaken when excess of mucus is present in the gastric contents. During the last few years we have found that well over 50 per cent. of cases of achlorhydria are curable in this way, including all our cases of achlorhydria with rheumatoid arthritis and asthma, most of them with gastrogenous diarrhœa and cholecystitis, and even, as you mention in your leading article, two cases of Addison's anæmia.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

Bex, Switzerland, Jan. 11th, 1931.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments have been made: Surg. Comdrs. R. A. Brown to *President* for post-graduate course, and to *Victory*, for Haslar Hospital; W. Bradbury to *Victory*, for Haslar Hospital, for four months' general professional course; and H. R. B. Hull to *Despatch*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. T. A. Brand to *Vivid*, for R.N. Barracks.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. S. L. Pallant retires on retd. pay.

Maj. J. A. Bennett retires on retd. pay.

Lt. W. A. R. Ross is secd. for duty with the Sudan Def. Force.

TERRITORIAL ARMY.

Lt. W. C. Armstrong to be Capt.

J. D. Pike to be Lt.

ROYAL AIR FORCE.

Flight Lt. J. E. Foran is transferred to the Reserve, Class D.ii.

INDIAN MEDICAL SERVICE.

Lts. B. D. Khurana and J. Singh to be Capts. (prov.) (on prob.).

COMMISSIONS IN THE ROYAL ARMY MEDICAL CORPS.

Twenty-five permanent commission in the R.A.M.C. are being offered to qualified medical practitioners under 28 years of age. Candidates will be required to present themselves in London for interview and medical examination, but there will be no entrance examination. At the same time, a certain number of temporary commissions under similar conditions as regards age and qualifications will also be offered. Applications should reach the Under Secretary of State, the War Office (A.M.D.1), Whitehall, London, S.W., not later than Jan. 19th.

EXTENSION OF WESTMORLAND COUNTY HOSPITAL. A new wing has been added to this institution, which provides 20 additional beds, and flats for the resident medical officer and matron.

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[1] THE LANCET, 1929, ii., 1023.

OBITUARY

JAMES A. ADAMS, M.D., F.R.F.P.S.G.,

CONSULTING SURGEON TO THE ROYAL INFIRMARY, GLASGOW, AND FORMERLY PRESIDENT OF THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS.

DR. JAMES ADAMS.

IT is always of interest to observe the part played by heredity amongst doctors, and fortunately, in spite of the changes in medical practice, the inclination for the sons of doctors to enter the medical profession seems not to alter. The essentially conservative mind of the professional classes of the North of England, and of Scotland, shows itself in the development of a family-inherited love of the practice of medicine, and the desire to see the sons follow the father's footsteps. Yorkshire boasts with credit of the Teales and the Heys; Lancashire of the Thomas and the Jones families; Scotland of the Monros, and the Marshalls and Cowans. Such "a dynasty of doctors" (as a member of the family called it) exists in the Adams of Glasgow, and the Maxwell-Adams of Lanark, of whom no fewer than 16 members belonged to the profession and could trace their personal and medical ancestry for about 150 years in direct descent.

James A. Adams, who died on Dec. 28th, 1930, at the age of 73, belonged to the Glasgow branch of the family, being the son of the late Dr. James Adams of that city. He was a brilliant student in the University of Glasgow, graduating in 1878 M.B., C.M. with commendation, and in 1881 M.D. with honours. Having surgery as his professional objective he became demonstrator of anatomy under John Cleland, professor of anatomy in the University, and early gave evidence of his keenness of observation and anatomical insight. In 1880 a discussion in the Glasgow Medico-Chirurgical Society on Cerebral Abscess and its Association with Diseases of the Ear was initiated by Dr. Thomas Barr, Glasgow's most distinguished aurist at that time, and apparently the whole subject of the cerebral complications of chronic middle-ear disease was much under discussion. Following upon the discussion Dr. Adams carried out an elaborate investigation on the anatomy of the temporal bone, and published his research in the *Glasgow Medical Journal*, June, 1881, under the title of Certain Anatomical Relations between Abscess of the Brain and Aural Disease. The main argument was to show that there are "anatomical peculiarities of structure in the organ of hearing which differ in the infant and in the adult, which explain the greater frequency of abscess of the brain in adult life as originating from disease of the ear, and that under certain conditions there is an abnormal state of the cerebral circulation which admits of a direct vascular connexion between the ear and the brain." This research paved the way for the brilliant work on Abscess of the Brain which followed a decade later. In March, 1882, in the Medico-Chirurgical Society, he pointed out the anatomical vascular relations of the middle ear and mastoid cells of the brain, and urged the operation of trephining the mastoid process in cases of aural disease where head symptoms appeared even in the slightest degree; and he went further and advocated opening the mastoid antrum in cases of chronic otitis media. His work in the anatomy department led him to suggest the advisability of shortening the round ligaments through incisions over the inguinal canals in the treatment of uterine displacement. This "new operation for uterine displacement," published in the *Glasgow Medical Journal*, June, 1882, soon became known as the Adams-Alexander operation. Adams was very careful to give Dr. William Alexander, of Liverpool, all the credit for priority in publishing successful cases of the operation, though he was correct in pointing out that he had been for 18 months previous to the publication teaching the operation and discussing it with his colleagues. Other papers of this period were on Diaphragmatic Hernia and Voluntary Dislocation of the Hip and Jaw. In 1895 he performed the first successful pylorectomy for malignant disease in Scotland; the case is fully recorded in the *British Medical Journal*, April, 1896; the technique employed was the same as that of Billroth. Dr. Adams showed himself, by these early publications, to be possessed of a considerable degree of originality of anatomical thought in surgery, and his careful practical work in the out-patient department of the Royal Infirmary is well exhibited in a record published in the *Glasgow Medical Journal* of one month's work in the out-patient department, pointing out that the out-patient department was easily the best field for the young surgeon and the student alike. Promotion to full surgeon came to him early in his career, and in 1892 he succeeded Macewen, who was appointed to the chair of surgery in the University. For many years Adams worked in one of the old Lister wards of the Infirmary, and the spirit and tradition of the great master were enthusiastically followed. He was a chief for the long period of 27 years, from 1892 to 1919, carrying on during the war after his term of office had expired. When the Princess Louise Hospital for Limbless Sailors and Soldiers was organised he offered his services as one of the surgeons, and held the post till his retirement.

Dr. Adams was a lover of his profession and ambitious for its honour. He was President of the Royal Faculty of Physicians and Surgeons in 1911, and the Faculty's representative on the General Medical Council from 1920 to 1928, and a sympathetic and knowledgeable administrator of the affairs of the Royal Infirmary. He proved a wise counsellor in medical education.

"Adams," says the writer of a personal appreciation, "was in all respects a notable personality in medical Glasgow. He lived the medical life to its fullest, and found time for its pleasures too. As a raconteur, and a retailer of merry quips and good-tempered raillery, he had no equal. He had many friends, and had the gift of keeping his friendships always in repair. It was a matter of great gratification to him, and is to the profession in Glasgow as well, that the family name and traditional love of the profession of medicine are being carried on so efficiently by his son."

Dr. Adams died at his residence, Balcarnock, Shandon, where he had been living in retirement for the last few years, and the funeral took place at Helensburgh.

M. FITZMAURICE-KELLY, M.B. Lond., F.R.C.S. Eng.

Mr. M. Fitzmaurice-Kelly, who died at Hove, aged 52, on Jan. 5th, had practised surgery at Brighton for ten years, and his judgment and operative skill was much valued by his colleagues. He received his medical education at St. Mary's Hospital, obtaining the senior entrance scholarship in Natural Science in 1897, and qualified M.R.C.S., L.R.C.P. in 1902, being appointed house physician the next year. In 1904 he became successively house surgeon and casualty house surgeon, and in 1905 took the gold medal in the B.S. Lond., and became F.R.C.S. The years 1906 to 1908 Mr. Kelly spent as demonstrator of anatomy in St. Mary's Medical School, being then appointed surgical registrar to the hospital. He had thus acquired considerable surgical experience when he joined the R.A.M.C., within a week of the outbreak of war, as temporary captain, afterwards being promoted to major. He was first attached to a general hospital at Boulogne, and then acted as surgical specialist at Calais, and later for a short time at a casualty clearing station. The severe weather conditions in France in the winter of 1916–17 injured his health; he was invalided home wounded in the summer of 1918, and Armistice Day found him still in hospital. He returned to duty as officer in charge of the surgical wards of the Royal Pavilion Hospital at Brighton, being attached also to the Shepherd's Bush special surgical hospital and to Queen Mary's Auxiliary Hospital, Roehampton. Deciding to settle in Brighton, Mr. Fitzmaurice-Kelly was made surgeon to the Royal Alexandra Hospital for Children and to the Hove General Hospital, and later assistant surgeon to the Royal Sussex County Hospital. He soon acquired and retained till his last illness a prominent position as a surgical consultant in Sussex, and his opinion was greatly valued. While at St. Mary's his main preoccupation was urinary surgery, but his experience at Shepherd's Bush and at Roehampton stimulated his interest in orthopædics, and many of his contributions to the Brighton and Sussex Medico-Chirurgical Society dealt with this branch of surgery. His operation for amputation at the hip-joint was widely known and practised. Mr. Fitzmaurice-Kelly had a fertile and resourceful mind and a strong sense of duty. He was well liked by patients and colleagues, and deep sympathy will be felt for his widow and daughters.

Mr. F. E. Feilden writes: "As a colleague at the Royal Alexandra Hospital for Children, I had ample opportunity of appreciating Fitzmaurice-Kelly's sterling qualities and outstanding personality. He was not a particularly rapid operator, but he was essentially thorough, and spent considerable time in planning an operation and the post-operative treatment. He was a general surgeon of the first order, with a profound knowledge of orthopædic surgery. Probably his most outstanding publication was that dealing with the cure of hernia by means of a living suture, published in 1927. For many years Mr. Fitzmaurice-Kelly was a prominent member of the local branch of the British Medical Association and of the Brighton and Sussex Medico-Chirurgical Society. He had remarkable gifts as a debater, and even those who did not agree with his line of thought admired the clarity with which he presented his case. During the past year Mr. Fitzmaurice-Kelly's health had given his friends considerable anxiety. He faced the gravity of his illness with the same courage and cheerfulness that characterised all his activities."

PANEL AND CONTRACT PRACTICE

Alleged Irregular Prescribing.

AN inquiry committee, consisting of a barrister and two doctors, recently examined certain charges made against a medical practitioner by a borough insurance committee. These charges alleged six different forms of irregularity on the part of the practitioner when prescribing for panel patients, but some of them were later withdrawn. The facts proved or admitted at the inquiry come under three headings:—

(1) On Jan. 27th, 1930, the respondent practitioner sold to a patient a quantity of vaccine ointment for 4*s.* 6*d.*, saying that he did not think it was an ointment which he could obtain for her as an insured person. He then made out a prescription in her name on Form G.P. 26, and in fact obtained a similar quantity of ointment from a chemist. In August, when he knew that complaints were being made against him, he repaid the 4*s.* 6*d.* to the patient and told her that he had obtained the ointment as he did. Explaining this, the respondent said that on Jan. 27th, after the patient left, he thought the matter over and decided to try to get the ointment for her on a prescription. After receiving it he attended her for a confinement, and forgot all about the money. When he remembered it he paid her.—The inquiry committee found that the charge of 4*s.* 6*d.* to an insured person in the circumstances described cannot be justified.

(2) On three dates in March and April the respondent prescribed on Form G.P. 26, 36 cachets for one of his insured patients. He obtained them direct from a chemist, but did not use them in the treatment of this case. Similarly, certain ampoules were prescribed, but not used, for another patient; in this case, however, the patient admitted that she refused to let him give her an injection.—The inquiry committee accepted this explanation.

(3) In seven other cases it was established that the respondent had written prescriptions on Form G.P. 26 and obtained articles himself direct from the chemist. In one case he said he feared to entrust the patient with 100 luminal tablets at once, and therefore gave them in quantities of about ten at a time. He prescribed 100 so as to keep down the cost of prescribing. Most of the other articles were for use by himself for insured persons, and it seemed convenient to obtain them direct.—The committee held that the practice thus described is liable to lead to abuse, "but we were not referred to, and are not aware of, any express prohibition of it in the Medical Benefit Regulations or Terms of Service. . . . There is no evidence to justify us in saying that the respondent adopted the practice of obtaining articles direct from chemists for any ulterior motive."

The inquiry committee recommended that each of the parties should pay their own costs. It stated that the allegations of the borough insurance committee had not been in substance substantiated, and might have been previously investigated by the medical services subcommittee. On the other hand, the respondent's conduct was undoubtedly liable to expose him to suspicion, and he had only himself to blame for being called on to justify or excuse it.

The Minister of Health, having considered the inquiry committee's report, has decided not to remove the respondent practitioner's name from the medical list. He proposes, however, to withhold £5 from the monies payable to the insurance committee in respect of medical benefit, and this will be deducted from the remuneration payable to the practitioner. The Minister makes no order about the costs of the inquiry.

Disciplinary Procedure.

Amendments of disciplinary procedure in national health insurance practice were suggested in a report presented on Tuesday last to a meeting of the Paddington Medical Society. The suggestions are grouped under ten headings:—

(1) All questions involving penalties of any degree should be removed from the punitive jurisdiction of the Ministry of Health and should be judicially determined by a medico-legal tribunal constituted for the purpose and subordinate to the General Medical Council which would have authority to apply suitable penalties.

(2) The proposed area administrative medical officer should advise and assist the clerk to the insurance committee in matters relating to discipline when a practitioner is concerned.

(3) In an appeal to the Minister he may determine the appeal without an oral hearing at his discretion. This should only be allowed when the appeal is based on an alleged irregularity in procedure on the part of any committee having previously dealt with the case.

(4) No distinction should be recognised between private and insured patients in respect of the following voluntary or automatic remedies which should be recognised as adequate for disciplinary purposes for insured and non-insured persons alike:

Change of doctor.
Police and/or county court proceedings.
Action by General Medical Council.

(5) The bulk of increased certification is due as we have shown, to causes beyond medical control. Whilst we consider that "laxity" on the part of a doctor should continue to be amenable to control as at present, any gross carelessness or neglect is accurately described as "false certification" and should for disciplinary purposes come logically under the control of the General Medical Council. At first sight it appears that the insurance practitioner enjoys a privileged position in respect of control by insurance and panel committee of his certification. This is not so inasmuch as their control is *additional* to that of the General Medical Council.

We suggest that one respect in which the General Medical Council could be reorganised is that such disciplinary control of insurance certification as appears necessary should be administered by a body definitely subordinate to the General Medical Council. Advantages following would be:—

(*a*) Uniformity in the definition of "laxity" and a clearer distinction between this and the factors in the increase of certification over which the practitioner has no control.

(*b*) The removal from medical administration in the Ministry of Health and in the local committees of the judicial and punitive elements which properly belong to the law courts, the General Medical Council, or elsewhere.

(6) The application of a suitable surcharge to patient, as recommended in respect of certain medicines, &c., prescribed, would deal with the bulk of the existing difficulties in connexion with prescribing. Inefficient prescribing should primarily be inquired into as at present. But the institution and application of penalties should again be in the hands of a suitable medico-legal tribunal constituted ad hoc by the General Medical Council.

(7) As these changes in any case would take a certain amount of time to affect we suggest, as an immediate measure, that all decisions adverse to a practitioner should be subject to appeal to a higher court.

(8) These recommendations are made with special regard to the situation which is likely to arise if and when extensions of the Acts ensue.

(9) Administrative control and regulation, of course, should remain as at present under the jurisdiction of the Minister except that penalties or dismissal would thus depend on the discretion of a professional disciplinary tribunal external to the Ministry of Health.

(10) We recognise that these recommendations depend not only on a considered extension of the present functions of the General Medical Council but also, on an alteration of the present constitution of the Council such as would give the insurance practitioner, as such, a more equitable representation thereon.

MEDICAL NEWS

University of Cambridge.

Diploma in Medical Radiology and Electrology.—The following recommendation from the Faculty Board of Medicine was passed by the Senate on Dec. 10th, 1930: "The Faculty Board have had under consideration the annual report of the committee for medical radiology and electrology, as well as other information relating to the Diploma. The Board are convinced by the evidence laid before them that the Diploma continues to meet a real need, and that the standard of the teaching and of the examination is satisfactory. The financial position also is satisfactory. The Board therefore are of opinion that the Diploma should be re-established for a period of three years, but that, in view of the rapid growth in allied subjects, the position and scope of the Diploma and the arrangements made with the British Institute of Radiology should be reviewed before the expiration of that period."

Royal College of Surgeons of England.

A meeting of the Council was held on Jan. 8th, with Lord Moynihan, the President, in the Chair.

Mr. Russell J. Howard, Mr. E. C. Hughes, and Mr. L. E. C. Norbury were admitted Members of the Court of Examiners. —Mr. Wilfred Trotter was appointed Hunterian Orator for 1932 and Mr. W. Sampson Handley Bradshaw Lecturer for 1931.—Mr. J. H. Thompson, of King's College, was appointed Melchett research scholar, the subject of his research to be Investigation into the Influence of the Parathyroid Gland on Processes of Growth.—The Hallett Prize was awarded to Mr. J. C. R. Hindenbach, of the University of Otago, on the result of the recent examination in anatomy and physiology for the Fellowship.

Diplomas of Membership were granted to S. S. Ahluwalia (Punjab and Univ. Coll.), W. N. Chalmers (Liverpool), and E. M. Sharples (St. Bartholomew's). Diplomas in psychological medicine and laryngology were granted jointly with the Royal College of Physicians.

It was reported that the Primary Examinations for the Fellowship to be held in the Dominions in 1931 would begin on August 11th at Melbourne and on Oct. 20th at Toronto.

The Council adopted the following answer to the resolution passed at the annual meeting of Fellows and Members on Nov. 20th last: "The main functions of the College are to promote and encourage the art and science of surgery for the common weal, and for this purpose to conduct the examinations of the College and to maintain the great Museum and Library placed under its care. In carrying out these functions the Council organises lectures and demonstrations, provides facilities for and encourages research, fosters social intercourse and the amenities of the profession, and in every way possible renders the College an instrument for the advancement of surgery in its widest sense, not only for the benefit of the Members and Fellows, but the whole profession throughout the Empire. In the opinion of the Council these functions are well carried out under the present constitution; after further and prolonged deliberation the Council has therefore decided that it is not desirable to alter the constitution of the College by providing for the direct and separate representation of Members of the College upon the Council. The decision of the Council is in conformity with the opinion expressed three years ago by the body of Fellows of the College who are the electorate."

University of Liverpool.

At recent examinations the following candidates were successful:—

D.P.H.

E. Hughes and J. W. Pickup.

University of Glasgow.

Dr. John Shaw Dunn has been appointed to the St. Mungo (Notman) chair of pathology in succession to the late Dr. J. H. Teacher. Prof. Dunn is at present professor of pathology in the University of Manchester.

Royal Sanitary Institute.

On Tuesday, Feb. 10th, at 6 P.M., at 90, Buckingham Palace-road, London, S.W., Lieut.-Colonel William Butler, Senior Medical Officer, London County Council, will open a discussion on Recent Methods of Sewage Treatment.

The Huxley Lecture.

The staff of Charing Cross Hospital and Medical School has invited Prof. Sigmund Freud to deliver the next biennial Huxley Lecture at the Medical School. Previous lecturers include Lister, Virchow, Pavlov, Flexner, and Gowland Hopkins.

The National Diet.

Prof. E. P. Cathcart will deliver two lectures, under the auspices of the University of London, on Feb. 23rd and 24th, on the National Diet. The lectures will be given at the London School of Hygiene and Tropical Medicine, Gower-street, at 6 P.M. on each date, and the chair will be taken by Sir Walter Fletcher on one day and by a member of the Board of Management of the School on the other. Admission is free.

Harveian Society of London.

This society is embarking on its centenary year, having been founded in 1831. At the annual general meeting on Jan. 8th the following officers were appointed:—President: Sir Thomas Horder. Vice-Presidents: Dr. Montague Smith, Dr. K. Playfair, Dr. H. C. H. Bull, and Dr. G. E. Oates. Hon. Secretaries: Mr. Cecil P. G. Wakeley and Dr. R. Cove-Smith. Treasurer: Dr. G. de B. Turtle. Council: Dr. A. C. Alport, Dr. W. F. Christie, Dr. Macdonald Critchley, Dr. A. H. Douthwaite, Mr. H. C. Edwards, Mr. D. C. L. Fitzwilliam, Dr. E. L. Gowlland, Prof. Tom Hare, Dr. T. C. Hunt, Dr. G. E. Orme, Mr. H. Rivers Pollock, and Mr. H. L. C. Wood.

Lister Institute of Preventive Medicine.

On the occasion of the recent retirement of Sir Charles Martin and Prof. Arthur Harden from the staff of the Institute, many of their colleagues and other research workers, past and present, met in the library of the Institute to offer parting gifts to their two distinguished colleagues. Prof. J. C. G. Ledingham, who is succeeding Sir Charles Martin as Director, presided over the meeting, and referred to the fact that only a few years ago a very similar gathering had assembled to express the great satisfaction which the conferment of knighthood on their Director had given them, and to celebrate the occasion by presenting him with his portrait. The staff of the Institute, he said, was losing the splendid services of both their friends because they had reached the prescribed age-limit, but they had completed their terms while still in their full mental vigour. Sir Charles had directed successfully the activities of the Institute for 27 years, the success of his administration being due to his tact, his business ability, and the catholicity of his scientific interests. Prof. Harden had served the Institute for 33 years and as Biochemist-in-Chief during that period had made his department an important centre of biochemical research. Only a year ago he had been awarded a Nobel prize in Chemistry for his work on fermentation. It was undoubted that the departure of Sir Charles Martin and Prof. Harden would mean a severe loss to the Institute's forces, but it was to be hoped that the traditions they had set would long remain a potent source of inspiration to their successors. On behalf of the many subscribers at home and abroad Miss Harriette Chick was called upon to present to Sir Charles and Lady Martin a silver coffee service designed and executed by Mr. P. S. Alexander, of Walberswick, Suffolk. Miss Muriel Robertson then unveiled and presented to Prof. Harden his portrait in oils by Mr. Neville Lewis. Sir Charles Martin and Prof. Harden, in returning thanks for these gifts, referred in reminiscent terms to the developments they had witnessed in the scope of the Institute's activities during their long service, and at the close of the reception which concluded the ceremony, they took leave of their colleagues.

Sir Charles and Lady Martin sailed on Jan. 2nd for Cape Town en route to Australia, where, as announced already in our columns, Sir Charles is taking up the position of Director of the Division of Animal Nutrition under the Commonwealth Council for Scientific and Industrial Research.

Medical Society of Individual Psychology.

Members of the medical profession are invited to hear Dr. Alfred Adler address this society at 11, Chandos-street, W., at 8.30 P.M. to-day, Friday, Jan. 16th. His subject is the Structure of Neuroses.

Post-graduate Course in Tuberculosis.

Under the auspices of the Joint Tuberculosis Council a post-graduate course will be held at the City of London Hospital for Diseases of the Heart and Lungs and elsewhere from Feb. 16th to 21st. Particulars may be had from Dr. William Brand, 8, Highway-court, Beaconsfield, Bucks.

British Empire Cancer Campaign.

Sir Charles Gordon-Watson presided at a meeting of the Grand Council on Jan. 12th. A grant of £6000 was made to the Middlesex Hospital towards cancer research in the year 1930–31, and a further grant of £600 making a total of £3600 since 1925, was authorised to the cancer research committee of the Marie Curie Hospital for the services of its medical research officer.—Sir Cuthbert Wallace, Director of the Radium Institute, London, was elected a member of the Grand Council and Prof. F. T. G. Hobday, Principal of the Royal Veterinary College, was also invited to become a member.—The Council approved the arrangements in connexion with the Garton prize of £500 and gold medal which is to be awarded to the person, or persons, submitting the best original dissertation on The Early Diagnosis of Cancer by December, 1931. It was announced that the Biological Effects and Mode of Action of Radiations upon Malignant and other Cells will be the subject for the second Garton Prize and Medal, the dissertations for which must be received by December, 1933.

It was reported that the popular handbook entitled "The Truth about Cancer" issued to the public on Dec. 4th, was now obtainable from all booksellers or direct from the publishers, Messrs. John Murray, at 2*s.* 6*d.* per copy. The book had been received with appreciation in all directions, and later editions would be issued so that it would keep abreast of developments.

Donations and Bequests.

Among other bequests the late Mr. John Bromilow Holt, of Heywood, Lancs, left £1000 each to the Manchester Royal Infirmary, the Bury Infirmary, St. Dunstan's Hostel for Blinded Sailors and Soldiers, and the National Society for the Prevention of Cruelty to Children; £750 each to the Royal Society for the Prevention of Cruelty to Animals, Dr. Barnardo's Homes, and Lord Mayor Treloar's Cripples Hospital; and £250 to the Heywood Crippled Children's and Holiday Home, Congleton.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Jan. 20th.—5.30 P.M., GENERAL MEETING OF FELLOWS. 8 P.M., PATHOLOGY.

WEDNESDAY.—8.30 P.M., Fellows and their friends will be received in the Library by the President and Mrs. Watts Eden. At 9.15 P.M. Dr. Arnold Chaplin will give an address entitled Great Figures in History, or Misconceptions Removed. Various objects of interest will be exhibited in the Library.

THURSDAY.—8.30 P.M., UROLOGY. Paper: Dr. S. Gilbert Scott: The Significance of the Radiological Renal Outline.

FRIDAY.—5 P.M., DISEASE IN CHILDREN. (Cases at 4.30 P.M.). 8 P.M., EPIDEMIOLOGY. Paper: Prof. E. L. Collis: Recent Views on Pneumonoconiosis.

HUNTERIAN SOCIETY.

MONDAY, Jan. 19th.—9 P.M. (at Apothecaries' Hall, Water-lane, E.C.), Dr. Arnold Lorand (Carlsbad): Problem of Rejuvenation.

MEDICO-LEGAL SOCIETY.

Thursday, Jan. 22nd.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. Nathan Raw: The Coroner's Verdict in Cases of Suicide, to be followed by a discussion.

LONDON CLINICAL SOCIETY.

TUESDAY, Jan. 20th.—9 P.M. (at The London Temperance Hospital), Dr. Geoffrey Evans will open a discussion on the Importance of Diet in Health and Disease.

CHELSEA CLINICAL SOCIETY.

TUESDAY, Jan. 20th.—8.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W., preceded by dinner at 7.30 P.M.). Discussion on the Treatment of Eczema. (Opener: Dr. Henry MacCormac.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

MONDAY, Jan. 19th.—5 P.M., Mr. Victor Bonney: Results and Technique of Myomectomy.

WEDNESDAY.—5 P.M., Mr. Basil Hume: Pathology of Diaphragmatic Hernia.

FRIDAY.—5 P.M., Mr. Tudor Thomas: Grafting of the Cornea in Rabbits.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Jan. 19th, to SATURDAY, Jan. 24th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Mon., at 4 P.M., free lecture by Mr. V. Zachary Cope on the Acute Abdomen. (Early Diagnosis Series.) —METROPOLITAN HOSPITAL, Kingsland-road, E. Mon., at 2 P.M., free post-graduate demonstration in Out-patient Department by Dr. N. H. Hill.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Tues., at 2.30 P.M., free post-graduate demonstration on Injection Treatment of Hæmorrhoids by Mr. Rodney Maingot.—Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Jan. 19th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Public Health Division), Keppel-street, Gower-street, W.C.

MONDAY, Jan. 19th.—3 P.M., Mr. D. S. Rabagliati: Veterinary Science in Relation to Public Health.

WEDNESDAY.—3 P.M., Prof. J. W. H. Eyre: Shell-fish and the Public Health. 4 P.M., Mr. F. C. Minett: Certain Diseases Common to Man and the Lower Animals.

UNIVERSITY OF LONDON, University College, Gower-street, W.C.

TUESDAY, Jan. 20th.—3.30 P.M., Mr. Pryns Hopkins: The Need of Psychologists and the Menace from Charlatans. (First of a course.)

UNIVERSITY COLLEGE MEDICAL SCHOOL, University-street, W.C.

TUESDAY, Jan. 20th.—5.15 P.M., Dr. J. A. Murray: Induction of Cancer by Tar and other Agents.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Jan. 22nd.—9 P.M., Sir Charlton Briscoe: Postural Pulmonary Complications.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

THURSDAY, Jan. 22nd.—5 P.M., Mr. W. M. McCullagh: Treatment of Post-partum Hæmorrhage.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Jan. 23rd.—4 P.M., Mr. Archer Ryland: Demonstrations of Museum Specimens.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Jan. 20th.—3.15 P.M., Mr. F. D. Saner: Selected Cases.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Jan. 20th.—5 P.M., Dr. J. A. Drake: Urticaria.

THURSDAY.—5 P.M., Dr. W. J. O'Donovan: Exfoliative Dermatitis.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.

THURSDAY, Jan. 22nd.—3 P.M., Dr Wilfred Harris: Clinical Demonstration.

Appointments

CULLEN, C. K., L.R.C.P. Lond., M.R.C.S., D.P.H., has been appointed Tuberculosis Officer, Shoreditch.

DAVIES, D. B., M.B. Ch.B. Edin., Medical Officer for Pontlottyn, Glam.

MOIR, J. H., M.D., Ch.B. Aberd., D.P.H., to be Certifying Surgeon under the Factory and Workshop Acts for Church Gresley, Derby.

ROBERTS, J. T. C., M.B., Ch.B. Liverp., D.P.H., Medical Officer of Health, Dukinfield and Hollingworth.

RUSHWORTH, J. A., L.R.C.P. Lond., M.R.C.S., Assistant to Medical Superintendent, Liverpool Sanatorium.

WYNN-WILLIAMS, N. R., M.B., B.S. Lond., Resident Assistant Physician to Montana Hall, Montana, Switzerland.

Gloucester County and City Mental Hospitals: KNIGHT, C. V., M.D. Lond., L.R.C.P. Lond., M.R.C.S., Consulting Surgeon; TERRY, H. CAIRNS, M.B., Ch.B. Birm., Consulting Physician; NICCOL, W., M.B., Ch.B. Glasg., Consulting Oculist; BERNSTEIN, S., L.R.C.P. Lond., M.R.C.S., Consulting Ear, Throat, and Nose Surgeon; GOSS, J., M.B., B.Chir. Camb., Consulting Radiologist; and DAVEY, E. N., M.B., B.Ch. N.U.I., Consulting Pathologist.

Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Sen. and Jun. H.S.'s. At rate of £150 and £120 respectively.

Ascot, Heatherwood Hospital.—Res. Asst. M.O. £300.

Bedford, Bedfordshire Sanatorium.—Res. Asst. M.O. £400.

Birmingham, Dudley Road, Hospital.—Jun. Asst. M.O.'s. Each at rate of £200.

Birmingham General Hospital.—Res. Anæsthetist. £120. Also Res. H.P. and H.S. Each £70.

Bolton Infirmary and Dispensary.—Cas. O. At rate of £150.

Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.

Bradford Royal Infirmary.—Two H.S.'s. Each at rate of £150.

Brighton, Royal Sussex County Hospital.—Hon. Asst. Surgeon.

Brighton, Steyning Institution.—Res. M.O. and Asst. Administrative County M.O. £600.

Bristol Royal Infirmary.—H.P.'s and H.S.'s to Special Depts. All at rate of £60.

Bury St. Edmunds, West Suffolk General Hospital.—Res. H.P. and Obstet. O. £150.

Cambridge, Papworth Village Settlement.—2nd and 3rd Asst. M.O.'s. At rate of £400 and £200 respectively.

Charing Cross Hospital, W.C.—Asst. Obstetric Physician.

Chelsea Hospital for Women, Arthur-street, S.W.—Registrar. £50.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

Dudley, Guest Hospital.—Asst. H.S. £160.

Durham, Seaham Hall Sanatorium.—Med. Supt. £600.

East London Hospital for Children, Shadwell, E.—H.S. At rate of £125.

Epsom, Surrey, Horton Mental Hospital.—4th Asst. M.O. £575

Evelina Hospital for Children, Southwark, S.E.—Hon. Dental Surgeon. H.P., Cas. and Out-patient Officer. Also H.S. All at rate of £120.

Golden-square Throat, Nose, and Ear Hospital, W.—Hon. Anæsthetist.

Hertford County Hospital.—H.P. £150.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—H.P. At rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Surg. Reg. £300. Also Refraction Asst. for Ophthalmic Dept. 1 gn. each attendance.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—Asst. Radiologist.

Ilford, King George Hospital.—Hon. Gynæcological Surgeon. Also H.S. At rate of £100.

Leeds Public Dispensary.—Jun. Res. M.O. £150.

Leicester, City Isolation Hospital and Sanatorium, Groby-road.—Jun. Asst. M.O. £300.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Liverpool County Borough Local Educational Authority.—Jun. Asst. School M.O.'s. Each £500.

Liverpool Eye and Ear Infirmary, Myrtle-street.—H.S. £100.

Liverpool, St. Paul's Hospital, Old Hall-street.—H.S. At rate of £120.

London Homœopathic Hospital, Gt. Ormond-street and Queen-square, Bloomsbury, W.C.—Three Res. M.O.'s. Each £100.

Manchester Royal Infirmary.—Jun. H.S. and Cas. O. for Central Branch, Roby-street. £100–£200.

Manchester, St. Mary's Hospitals.—Sen. Asst. M.O. for Children's Out-Patient Dept. Also Jun. Asst. M.O. At rate of £100 and £50 respectively.

Margate Royal Sea Bathing Hospital, &c.—H.S. At rate of £200.

Middlesbrough Education Committee.—Sen. Asst. School M.O. £500.

Northampton General Hospital.—Hon. Asst. Physician.

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.

Plymouth, Central Hospital.—H.S. £130.

Poole, Dorset, Cornelia and East Dorset Hospital.—H.S. At rate of £150.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Royal London Ophthalmic Hospital, City-road, E.C.—Out-Patient Officer. £100.

St. George's Hospital, S.W.—Asst. Ophth. Surgeon.

St. Mark's Hospital for Cancer, City-road, E.C.—Res. Surg. O. £150.

St. Mark's Hospital for Fistula, Cancer &c., City-road, E.C.—Two Anæsthetists. Each £25.

Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Res. Anæsthetist. £80–£100.

Sheffield Royal Infirmary.—Asst. Aural and Ophth. H.S. At rate of £80.

South Shields, Harton Hospital.—Two H.S.'s. Each £150.

Wallasey, Victoria Central Hospital.—Jun. H.S. At rate of £100.

Wigan, Royal Infirmary.—Third H.S. At rate of £150.

Willesden General Hospital, N.W.—Registrars.

Worcester, County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Breage (Cornwall); Knighton (Radnor); Llangennech (Carmarthenshire); Sudbury (Suffolk); and at Tewkesbury (Glos.).

The Home Secretary is considering the question of appointing an additional Medical Referee under the Workmen's Compensation Act for the Falkirk district of the Sheriffdom of Stirling, Dumbarton, and Clackmannan. Applications should reach the Private Secretary, Scottish Office, Whitehall, London, S.W.1, not later than Feb. 3rd.

PAULTON ISOLATION HOSPITAL.—Last week Mr. F. Gould, M.P. opened a Joint Isolation Hospital at Paulton, Somerset. The hospital, which has cost £13,400, will serve the needs of several rural and urban districts.

NOTES, COMMENTS, AND ABSTRACTS

TROPICAL DISEASE IN LIBERIA.

LIBERIA, a rich country, constitutes at present the one totally unexplored stretch of West Africa. This Negro Republic was founded as an American Colony about 110 years ago, and since the Treaty of Versailles the United States has been acting as its adviser in Liberian affairs. A report of the Commission appointed to inquire into the existence of slavery in the native West African Republic has just appeared, and exposes a condition of misgovernment which it is certain will not be allowed to continue now that public attention has been called to the horrible facts. The abuses whose existence is thus revealed have been suspected for a long time, and have been hinted at by at least one well-known writer, but as a matter of fact very little is known about the interior of Liberia, and Americo-Liberians, who form the ruling section of the Republic, would appear to be unable to penetrate further than 30 miles from the coast under some legal restrictions.

Some of this unfortunate ignorance will be dissipated by the generosity of the department of Tropical Medicine and Institute of Tropical Biology of Harvard University, for there has now appeared issued by that Department a magnificent account of an expedition working in 1926–27 in the African Republic and inquiring into the incidence of tropical disease. The members of the expedition were Prof. Richard P. Strong, Professor of Tropical Medicine in the Harvard Medical School, and Drs. Glover M. Allen, Joseph C. Bequaert, Harold J. Coolidge, David H. Linder, George C. Shattuck, Max Theiler, and Loring Whitman. Their observations and notes on the material collected have been ably edited by Prof. Strong.[1]

Many are familiar with the work of the Department of Tropical Medicine of Harvard University, and with the results of former expeditions to South America under the leadership of Prof. Strong, so that the appearance of these two particularly fine octavo volumes, dealing with analogous activity in Liberia, will be welcomed with appreciation. The two volumes, totalling 1052 pages, are replete with close print and furnished with nine maps and 476 photographic figures, of which 15 are in colour; there are also 28 text-figures presented for study. It is particularly appropriate that the work should be dedicated to Harvey S. Firestone as the man who has done so much for the development of the country and for the welfare of its inhabitants. Mr. Firestone has acquired a 99 years lease of a million acres of land upon which to develop the growth of rubber, and it is unthinkable that such operations should proceed without due attention to the findings of the recent Commission.

ROUTE, CLIMATE AND CONDITIONS.

The observations here recorded were made both along the sea-coast and in the interior. The country was crossed in three directions and investigations were carried out on the way from base camps established at strategic points. No trustworthy maps of the hinterland of Liberia were in existence. The greater part of the country has not been accurately surveyed from a geographical standpoint, and the maps already published are grossly inadequate and inaccurate. Consequently the maps in this report, compiled mainly by the energy of the Firestone Company and that of the expedition, may be taken as authoritative of the country at present. Investigations in Liberia being completed, the route travelled by the expedition across Africa was through the Belgian Congo, following the course of the Congo River and the Lualaba to Kabalo. From Kabalo the expedition proceeded by rail to Albertville on Lake Tanganyika and thence travelled north-east to Kigoma, Lakes Kivu and Edward, the Semliki Valley, Kivu and the Ituri forest. In all some 1500 miles were done on foot along trails and incompleted roads. Finally the party reached Entebbe on Lake Victoria.

The climate on the Liberian Coast is insalubrious, mainly due to the combination of excessive humidity with continuous, but not excessive, heat. At nine o'clock in the morning it is unpleasant to walk, one perspires throughout the day, even in the house. The towns on the coast have an average temperature of 76° F. to 80° F. and a seasonal variation of a very few degrees, making them unpleasant places of residence for unseasoned visitors, but the interior of the country is more salubrious. The conditions in the forests of Liberia have remained practically unchanged during the last fifty years since Stanley first opened up Central Africa to the white man, so that the success of this expedition of eight Americans, who spent almost a year in tropical Africa, in remaining free from tropical disease, once more demonstrates that in any parts of the dark continent white man can travel and not succumb to disease, provided that necessary hygienic precautions are taken. Much thought and continued care were necessary in exercising the proper precautions. The prophylactic use of quinine was considered necessary. True, it has been amply demonstrated that malaria infection cannot be prevented, even if as much as 1 gramme of quinine is taken daily, yet the members of the expedition are convinced that it masks a number of infections, eliminates some, and definitely modifies the virulence of others. In short, it materially influenced the efficiency of the expedition by its influence upon malaria.

THE TROPICAL SCOURGES.

The first volume deals with the diseases chiefly encountered in Liberia—malaria, blackwater fever, filariasis, onchocerciasis, juxta-articular nodules, schistosomiasis, leprosy, yaws, syphilis, granulomatous and parasitic conditions of the skin, ainhum, intestinal parasitism, amœbic dysentery, tuberculosis and diseases of the genital organs, notably gonorrhœa. Bacillary dysentery, typhoid fever, trypanosomiasis, yellow fever, and nutritional disturbances are rarer, whilst bubonic plague and relapsing fever are seldom found.

With particular regard to malaria, Dr. Shattuck concluded from his clinical studies that splenic enlargement does not seem to be a reliable indication of the disease in Liberia. Non-enlargement of the spleen does not exclude malaria, while splenomegaly is not uncommon in association with a negative blood examination. In only 4·7 per cent. was it definitely enlarged, which is a particularly low rate as compared to what prevails in Amazonia. In one case the diagnosis was lymphatic leukæmia, in a second schistosomiasis. The existence of a separate disease *Splenomegalia mycotica* is discussed, but considered problematical. No cases of yellow fever occurred whilst the expedition was in the country, although six had been reported shortly before their arrival. Schistosomiasis does not appear to be uncommon in Liberia and the eggs of *S. hæmatobium* were found in the urine in one case, and the lateral-spined *S. mansoni* in the fæces. In one instance the eggs of *S. hæmatobium* were present in fæces and those of *S. mansoni* in urine. Filariasis is prevalent both upon the coast and in the interior. At Gbanga in a series of 105 natives examined, *Filaria bancrofti* was found in two instances, *A. perstans* in one, and *Loa loa* in one.

Culicoides grahami, one of the insect vectors of *A. perstans*, was found inland and in the Belgian

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[1] The African Republic of Liberia and the Belgian Congo. Based on observations made and material collected during the Harvard African Expedition, 1926–1927. In two volumes. Cambridge: Harvard University Press. 1930. $15 a set.

Congo. It was not, however, very abundant during the time the expedition was in the country. Elephantiasis, particularly of the lower extremities and scrotum, was found to be common, more especially amongst the adult Krus. Verrucose papillomatosis of the skin presented such a striking appearance that it might be confused with "mossy foot"! In a cystic tumour of the forearm removed by Dr. C. C. Chesterman on the Upper Congo, an adult *Loa loa*, 5 cm. in length, lying free in the fluid was demonstrated. Curious to relate the guinea-worm is not common. Infection with *Onchocerca volvulus* was first observed in the interior at an altitude of 900 ft. In the same region numbers of *Simulium damnosum* occurred and in dissections of adult flies caught near a village, developmental forms of onchocerca were successfully demonstrated. Histological studies of onchocerca tumours revealed spindle-shaped cells suggestive of fibrosarcoma. It was further observed that African subjects of these tumours are very liable to keloid formations, of which some remarkable illustrations are given.

The ætiology of that curious condition known as juxta-articular nodules, which appears to be fairly common, was carefully studied and a minute investigation of the cellular pathology made. It seemed probable that these growths originated from some form of mechanical irritation, just as other true neoplasms may, and that in some instances they were onchocercal in origin, in others frambœsial or syphilitic. It is pointed out, however, that the disease is rare in white people, in whom only 25 cases have been reported, while a few have been found in individuals who have never been outside Europe. Syphilis and yaws, grouped under the convenient generalisation—treponemiasis—claimed a great deal of attention. Regarding the vexed question of their identity, the observers have been unable to add any considerable additional knowledge. They consider themselves justified in regarding yaws as an attenuated virus of syphilis, less virulent in producing a disease modified by the portal of entry through many years of successive passage via the epidermis of black skinned races, and by the habits of these people plus the climatic and hygienic conditions under which they live. Other chapters deal with the terrible disfiguration known as gangosa and rhinopharyngitis mutilans—possibly also spirochætal infections. Goundou was seen in children in whom it formed striking paranasal lesions and leprosy occurred associated with dermal moniliasis. One case of sporotrichosis was discovered and the blastomycotic elements demonstrated in sections of the skin. Other fungous invasions of the epidermis were studied in the same manner and are well illustrated by sections removed at biopsy. Under other pathological conditions are grouped neoplasms, tuberculosis, and trypanosomiasis, the latter being very rare in Liberia was studied on the upper reaches of the Congo.

A chapter is devoted to plant parasitic diseases, another, and a very considerable one, to similar infections of wild animals, mainly game shot in Congo Ituri District. In a section on some parasitic helminths collected by the expedition, J. H. Sandground has made a very considerable contribution to animal helminthology, while in addition a new species *Tylenchus alatus* is described from the root of young cinchona plants. Special protozoological studies of the blood with two finely coloured plates are from the pen of Max Theiler. The botanical report by D. H. Linder is sound and informing.

The second volume consists entirely of pure zoology and is a record of the mammals, birds, reptiles, and amphibians collected in Liberia and on the Congo, while it is hardly surprising to note that the very complete account of entomology occupies more than half the volume.

There is no doubt that the labours of this Harvard Expedition will re-echo in many other departments of science and will form a record which will be consulted by specialists for many years to come.

NEW PREPARATIONS.

SEDICYL (from the Dr. Joachim Wiernik and Co. Chemical Works in Berlin. Agents, Coates and Cooper, 41, Great Tower-street, London).—We have received a specimen of this choline derivative which has recently been used in Germany in gynæcology, previous experimental work on rats having shown that the substance influences the correlation disturbances of the climacterium, and exerts a physiological action on the nervous system, as evidenced by its value in face of such symptoms as giddiness, headache, and palpitation. The manufacturers state that it is absolutely harmless, and can be used for prolonged treatments without any undesirable after-effects. It is put up in tubes of 25 tablets each, and the dosage is one or two tablets three times daily with a subsequent reduction to two tablets per day, when the substance will still exert its effect.

DIMOL PESSARIES (Dimol Laboratories, Ltd., 40 Ludgate-hill, London; Distributing Agents, Messrs Sangers, 258, Euston-road, London) is a new Dimo preparation, the *gelatin* pessaries being guarantee to contain individually the equivalent in bactericida action to half a drachm of pure carbolic acid, whil the claim that they are free from any untowar action on the mucosa is a recommendation to the use in midwifery and gynæcology. The pessaries ar put up in cartons containin one dozen in each.

EPHEDRINE Nasal Jelly, Inhalant Compoun and Throat Spray.—We have received from Britis Drug Houses, Ltd., Graham-street, City-road, Londo samples of these three forms of B.D.H. ephedrin the alkaloid from the Chinese plant, Ma Huan being made by a special process to which the fir attach particular importance. The nasal jelly, whic is put up in collapsible tubes, is composed of ephedri in pure soft petroleum; the inhalant is a solution the drug in liquid paraffin with menthol, campho and oil of thyme; and the throat spray is an aqueo solution of the hydrochloride of ephedrine wi chlorbutal. Ephedrine is, of course, similar in actio to adrenalin, the circulatory stimulation being marke The different salts have proved useful in the treatme of certain types of asthma, in hay-fever, and co gestion of the nasal mucous membrane.

Births, Marriages, and Deaths

MARRIAGES.

MAY—KAYE.—On Jan. 3rd, at Holy Trinity Church, Brompto road, Richard W. L. May, M.A., M.B., B.Ch., of Eto Windsor, to Winifred, only child of Mr. and Mrs. Kaye, Hatfield, Hendon-lane, N.

THOMAS—THOMAS.—On Jan. 6th, at the Parish Church, Ris William Evans Thomas, M.D., J.P., of Llys-y-graig, Ystr to Catherine Elizabeth, widow of D. J. Thomas, M.R.C. J.P., of The Rhyl, Porthcawl.

WAY—SCOTT FOSTER.—On Jan. 9th, Montague Way, J. M.R.C.S., L.R.C.P., to Margaret, youngest daugher of t late Sir Scott Foster, J.P.

DEATHS.

ABBOTT.—On Jan. 11th, at Lake House, Wrightington, Lan after a long illness, Dr. Frederic William Abbott, former of Balham and Christchurch, in his 68th year.

CLARK.—On Jan. 7th, at his residence, Great George's-roa Waterloo, near Liverpool, John Barclay Clark, M.D., C. Edin., aged 90 years.

MANSEL.—On Jan. 8th, at Brentwood, Essex, Charles Jo Linskill Mansel, O.B.E., M.D.

O'HERLIHY.—On Jan. 9th, at Monte Carlo, Dr. Corneli O'Herlihy, of Inniscarra, Co. Cork, aged 47.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1930.

THE Index and Title-page to Vol. II., 1930, whic was completed with the issue of Dec. 27th, is now i preparation. A copy will be sent gratis to su scribers on receipt of a post-card addressed to th Manager of THE LANCET, 7, Adam-street, Adelph W.C.2. Subscribers who have not already indicate their desire to receive Indexes regularly as publishe should do so now.

ADDRESSES AND ORIGINAL ARTICLES

THE TECHNIQUE AND RESULTS OF MYOMECTOMY.*

By Victor Bonney, M.S., M.D., B.Sc. Lond.,
F.R.C.S Eng., F.C.S.A.,
GYNÆCOLOGICAL SURGEON TO THE MIDDLESEX HOSPITAL; SURGEON TO CHELSEA HOSPITAL FOR WOMEN.

In the dawn of abdominal surgery, when Spencer Wells and other pioneers were proving the practicability of intraperitoneal operations, it occasionally happened that a tumour, supposed to be an ovarian cyst, turned out to be a fibroid attached to the uterus by a stalk and hence capable of being removed by the technique employed in ovariotomy. Myomectomy is therefore one of the oldest of the abdominal operations, but its development has been very slow. For many years after ovariotomy had obtained full acceptance the uterus remained a territory almost forbidden to the abdominal surgeon except for the occasional and mostly accidental removal of pedunculated fibroids. That myomata could be enucleated became apparent as surgery, increasingly daring, began to deal with tumours having shorter and shorter pedicles, until at last it essayed to cope with those having none at all. A new problem immediately presented itself, for the technique of ovariotomy was not applicable to a tumour that was sessile or embedded. The difficulty was twofold: how to control the bleeding caused by the enucleation, and how to close the cavity left by the tumour. Instead of solving the problem, surgery circumvented it by making the lower segment of the uterus itself the pedicle of the tumour and applying to it the technical management of a cyst pedicle.

From that time onwards the method of performance of abdominal hysterectomy was steadily improved upon by successive generations of gynæcological surgeons until since a number of years now a technique has been established impossible of further advancement. The older operation of myomectomy, on the other hand, lagged behind. From time to time over the last 40 years a few surgeons here and there essayed it on the large scale, but their efforts as far as influencing surgical thought was concerned were barren. The greatest of these pioneers was W. Alexander, of Liverpool, who in 1897–98 in three remarkable papers[1] described a technique by which he had been able to remove successfully as many as 25 tumours from a single uterus. His innovation had a hostile reception, and it is significant that though I entered gynæcology only six months after the papers were published I never heard or saw them referred to or indeed knew of their existence until 1922 when I had occasion to look up the literature.

The Conservation of the Uterus.

Since cure without deformity or loss of function must ever be surgery's highest ideal, the general proposition that myomectomy is a greater surgical achievement than hysterectomy is incontestable. Passing from the general principle to the particular argument, we have first to consider the question of childbearing. The duration of a woman's capacity for conception varies according to whether the conception is a first or a subsequent one. For first conception 43 years of age may be taken as the practical limit, but for subsequent conception 45, so that at least up to 41 the preservation of the uterus deserves serious consideration if, as I shall presently show, pregnancy is not only possible but likely after such preservation. It is true that many women do not wish for children or more children, but that is a very different thing from desiring that the capacity for conception shall be taken away from them. The two must not be confounded. The conscious or subconscious knowledge of the power to conceive is the nucleus around which the feminine sex-emotions most commonly cluster quite apart from whether or not a child is actually desired, and the central idea being gone the emotions either wilt or transfer themselves to spheres of emotional activity other than sex. There are certain women, no doubt, in whom union with the beloved rather than the results of that union is the central idea, and to such the loss of the organ of conception will be less important in its psychic results. This is the male type of sexuality, though even in men the paternal idea bulks much larger than the individual himself is usually aware of, and when the culminating act is condemned to irrevocable futility a weakening of the sex ties is very liable to ensue. An instinctive knowledge of this fact is at the back of many patients' objection to hysterectomy, and women thus marred not infrequently develop an inferiority complex under which they magnify trivial acts of forgetfulness into intentional slights and become touchy and suspicious.

Women who have borne children, especially many children, are on the average much less likely to be adverse to the idea of losing their wombs than women who have borne none, although amongst this latter group there are many whose chances of childbearing under any circumstances are practically non-existent. The assurance afforded by the operation against any further extension of the anxieties and self-sacrifices of motherhood is no doubt partly responsible for this average difference of attitude, but beyond it I think that the parous woman feels that having borne children the perfection of her femininity needs no further proof, just as a soldier having shown his courage in the field lays by his sword without regret or misgiving. Though the majority of men when they marry do so for affection and companionship and not for the sake of having children, yet there is a certain proportion to whom the rearing of a family is the chief incentive. The value, therefore, of a woman from the point of view of marriage is definitely lowered if she is wombless. Fibroids are relatively rare in young women, yet they are not infrequently met with, and surely it is a sorry reflection on surgery if it is not able to secure health for such patients without jeopardising their future happiness, and the gynæcological surgeon, but half-sighted, who is blind to the importance of leaving intact in its fullest possible strength the tie that binds together such totally dissimilar creatures as man and woman.

There exists such diversity in feminine character that no sweeping generalisation on anything connected with the sex is possible, but this at least is true that to a considerable proportion of women the removal of the womb is repugnant either because they hope to have children or wish to maintain the possibility of having them, or fear the effect on their own affections or on those of their husbands or lovers. Women in these matters do not commonly wear their hearts on their sleeves so that the surgeon frequently has little or no knowledge of the psychology of the patient whom he is advising. It is wisest for him, therefore, in the absence of expressed opinion one way or the other, to be as conservative as possible, bearing in mind that the patient in committing to him the fate of her womb is often entrusting him with her future happiness as well.

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* A Hunterian lecture delivered before the Royal College of Surgeons of England on Jan. 19th, 1931.

[1] Med. Press and Circ., 1897, lxiii., 411; 1898, lxv., 349; Brit. Gyn. Jour., 1898–99, xiv., 47.

Myomectomy.

Some 18 years ago, impelled by the considerations just set forth, I began to explore the possibilities of extending the conservation of the uterus to those cases of fibroids hitherto considered to be outside the range of conservative surgery. By 1918 I had gained experience enough to be able to show that the old limits set on myomectomy no longer obtained.[2] In 1922 a second paper[3] of mine appeared expanding the subject considerably and describing the technique of the operation with some minuteness, and in 1925 I published the results of 220 consecutive operations.[4] Five years have elapsed since then, during which period I have steadily pushed on with the work, not only to the widening of my experience and the improvement of my operative technique, but to a better appreciation of the ultimate results of the operation.

Let me remind you of the position occupied by myomectomy up to a few years ago. It was an operation whose application according to the gynæcological text-books was limited to cases in which a single fibroid was present, either stalked, sessile, or not too deeply embedded, whilst the only description of the technique to be found in any book on operative surgery was briefly how to ligature the pedicle of a stalked tumour and how to suture up a small and superficial enucleation cavity. I have altered all that, so that to-day it may be said that it is unusual to meet with a case of fibroids—no matter how numerous the tumours, how large or how placed—that is beyond the scope of conservative surgery. The dissatisfaction and regret of being compelled by the poverty of our resources to remove the uterus from a girl of under 25, or from a woman of 30 recently engaged and looking forward to the joys of maternity, or from a newly-wed wife of 35 who after years of waiting thought that her wish was going to be realised—the dissatisfaction and regret, I say, of having to do this, and in doing it act the executioner of who knows how many secret hopes and tender fancies—need be ours no longer. The surgeon, in short, has a freedom of choice and action when dealing with fibroids that he did not possess before.

RESULTS AND SEQUELS OF THE OPERATION.

From 1911 up to the end of last year I performed myomectomy 403 times. The tumours removed were solitary in 166 cases and multiple in 237 cases. The greatest number of fibroids I have removed from a single uterus is 125, and after this 92, 80, 55, 52, 48, 46, and 44, whilst on 28 occasions the number has varied between 15 and 30. It is obvious therefore that the mere quantity of fibroids contained in a uterus does not bar conservative operation. Nor does the size per se, for I have performed multiple myomectomy in cases where the total mass was about that of a full-term pregnancy. The ease or the difficulty of the operation depends less on the size and the number of the tumours than on the position they occupy in the uterus. Thus, a tumour of the lateral wall is more troublesome to remove than one in the anterior wall, and a tumour in the posterior wall more difficult than either. I shall return to these points later.

Operative Mortality.—There have been seven deaths in the series, an operative death-rate of 1·7 per cent. This is much about the same mortality as attaches to hysterectomy for fibroids when carried out by surgeons expert in that operation. The causes of death were as follows: One patient succumbed to secondary hæmorrhage, unfortunately not detected until too late. A technical fault was involved here. One death was due to necrosis of part of the uterine wall caused by the over-use of matress sutures. Two patients died of paretic intestinal obstruction, the cause of which I much suspect was the same technical fault. There was one death by pulmonary embolism, the woman up to that moment having been perfectly well. Finally, there were two deaths due to hæmorrhagic shock which specially deserve attention. Both patients had large multiple fibroids and in addition were pregnant, the one about six months and the other at term. In order to remove the child it was necessary in both cases to cut into a mass of fibroids on the anterior wall of the uterus, and the incisions and subsequent enucleations were accompanied by bleeding of great violence. I shall come back to these cases presently.

Late Results.—Excepting in the case of operations performed in the last two years I wrote to all my patients' medical men, or where there was no medical man to the patients themselves asking: (1) the effect of the operation on the periods, (2) the necessity or otherwise for further operation, (3) whether the patient had been pregnant since the operation, and (4) the effect of the operation on the general health. Considering that many of the women had been operated on in hospital years ago, since when I had had no communication with them, the 210 replies received were more than I expected. The reports on the whole are surprisingly satisfactory and much beyond my anticipation, although I knew beforehand that the results were good, for no surgeon can go on performing a number of operations whose results are unsatisfactory without in a short time becoming acutely aware of his failures which, like other sins and deficiencies, presently come home to roost.

Menorrhagia.—Out of these 210 cases menorrhagia either persisted after the operation or recurred ten times. Five of the patients (three of whom had new fibroids) subsequently underwent hysterectomy; one was curetted, and two had intra-uterine polyps removed. The remaining two have had no further operation.

Development of New Fibroids.—Eight of the 210 patients developed new fibroids after the operation. Two have required no further operation, the recurrent tumours being small. The particulars of the six who developed new fibroids and underwent a second abdominal operation are as follows:—

Patient.	Age.	Fibroids originally removed.
No. 1	19 years	92
„ 2	23 „	52
„ 3	29 „	4
„ 4	30 „	8
„ 5	29 „	17
„ 6	36 „	14

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[2] Brit. Med. Jour., 1918, i., 278.

[3] Jour. Obst. and Gyn. Brit. Emp., 1922, xxix., and THE LANCET, 1922, ii., 745.

[4] Brit. Med. Jour., 1925, ii., 951.

It will be perceived that this group contains two very exceptional cases—in particular the girl of 19, from whose uterus I removed 92 fibroids. When fibroids are developed at such an unusually early age a special tendency to the formation of such tumours must be inferred, and therefore the chance of new fibroids forming must be very considerable, not only because the patient has more years before her in which to form them but also because the uterine tissue itself is in its fibroid-forming tendency peculiar. My experience leads me to believe that the tendency to the formation of these tumours is a passing phase in the uterine tissues and not a continuous defect, for otherwise myomectomy would be bound to fail in a very large proportion of the cases, whereas, in fact, recrudescence is, as I have shown, quite rare Such a passing phase is paralleled in gall-stone formation. If the tendency to form calculi was a permanent defect of the gall-bladder, cholecystotomy would be bound to fail every time, for new calculi would begin to form from the very moment the old ones were extracted. That new calculi do sometimes form is true, but with nothing like the frequency that a permanent calculus-forming habit of the gall-bladder would demand.

In the case of the uterus I believe that in most instances the nuclei of all the fibroids a woman is ever going to grow are laid down by the time she has reached 30 years of age, or but very little over. It follows that when myomectomy is performed on patients in the twenties or early thirties the fibroid-forming tendency of the uterine tissues has not yet gone into abeyance and the chances of the formation of new tumours is on this account considerably greater than when the operation is performed on patients over 34 years of age, especially when the number of tumours removed at the first operation has been considerable. On the other hand, it is just in these exceptionally young patients that the desirability of saving the uterus is greatest, and if surgery can restore their marriage value for even a few years, or, better still, enable them to have even one child, no inconsiderable gain is effected even though in the end hysterectomy becomes inevitable.

The details of the subsequent operations of these six patients are as follows. The first three developed new fibroids very quickly, and all of them in from two to five years had to have the uterus removed. The fourth patient conceived after the myomectomy, and during the pregnancy new fibroids were felt in the uterus. She delivered herself naturally, and then returned to the hospital for removal of the new tumours which were obviously growing. She was anxious, however, not to have any more children as she already had three, and hysterectomy was carried out though re-myomectomy would have been equally easy. The fifth patient was very anxious to conceive but did not do so although at the time of the myomectomy the tubes and ovaries were normal. Eight years after the operation she had severe pains which were attributed to appendicitis. I reopened her and the cause of her sterility was revealed in extensive endometriomatosis of both ovaries. I enucleated the blood cysts and, finding a few small new fibroids in the uterus, enucleated them also. She is now 38 but has not conceived. The sixth patient conceived of her first child eight years after the myomectomy; I delivered her by Cæsarean hysterectomy, several new fibroids having developed in the uterus, and the patient being in her forty-fifth year.

General Health.—The health of the 210 women concerning whom information was received has, apart from the ten instances of recurrence of the menorrhagia, been very good indeed. Of only two of them is it stated that their general condition is poor. Two other women besides the one already mentioned had been operated on for endometriomatous cysts of the ovary subsequent to the myomectomy but without the finding of any more fibroids. It is possible that fibroids may promote endometriomatosis—at all events, the two conditions are not infrequently found together.

Pregnancy after Operation.—Of the 210 patients from whom replies have been received 120 were at the date of their operations under 41 years of age, whilst 90 were over that age. Of the 120 under 41 years of age 33 have remained either unmarried or widows, whilst nine stated that pregnancy had been prevented, and one patient had her tubes tied at the operation. These being subtracted there remains a group of 77 married women within the childbearing age at the time of the operation and wishful to conceive after it. Of this group no less than 30, or 39 per cent., did conceive after the operation. Twenty-six of them conceived once (one with twins). Two of them conceived twice, and two of them conceived three times. The manner of their deliveries is as follows: Of the 26 who conceived once 18 delivered themselves naturally, five were delivered by Cæsarean section, one by Cæsarean hysterectomy, and two miscarried. Of the two who conceived twice the deliveries were all natural. Of the two who conceived three times the deliveries in one case were all natural, but in the other the first child had to be perforated for contracted pelvis, after which she had two further deliveries by Cæsarean section.

Altogether 36 live children have been produced by these women, and to this gain in infant life must be added seven cases in which, when performing myomectomy on a pregnant uterus, I conserved the child within the uterus so that it was delivered in due course at term.

SUMMARY OF RESULTS.

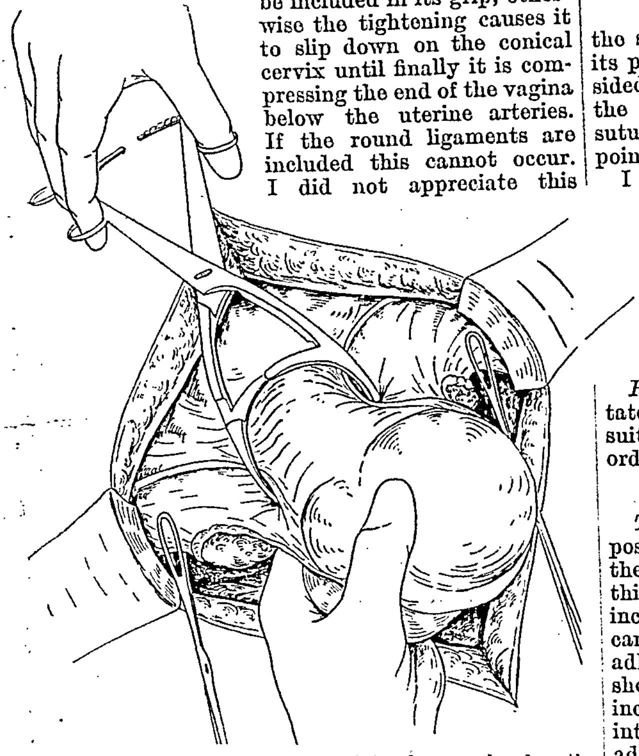
At the beginning of this paper I remarked on the slow development of myomectomy as compared with other standard abdominal operations. Three objections levelled against it have been responsible for this. The first objection was that except when restricted to a very special and small group of cases it was a much more dangerous operation than hysterectomy. The second asserted that the excessive loss at the periods about which most women possessing fibroids come complaining would probably continue after the operation. The third alleged that a uterus from which a deeply embedded fibroid and, still more, multiple fibroids had been enucleated would be of little use for childbearing and would be a danger in the event of conception. The figures I have laid before you to-day will, I hope, dispose of these objections for good and all. The operative mortality of myomectomy need be no greater than that of hysterectomy—i.e., somewhere between 1 and 2 per cent. The proportion of cases in which, subsequent to myomectomy, menorrhagia due either to new fibroids or to other causes compels eventual hysterectomy is 3 per cent. Of women who have undergone myomectomy and are within the age for childbearing and wishful to have a child, 39 per cent. may be expected to conceive. Of the children born after the myomectomies performed by me 75 per cent. were born naturally, and more could have been born so only that certain of the mothers having already experience of an abdominal operation elected to have the child delivered by Cæsarean section in order to give it the best possible chance of surviving.

Technique of the Operation.

Asepsis.—In no operation is asepsis of more importance, for the total extent of the rawed surfaces is often considerable and the number of sutures used very large. I cover the edges of the abdominal wound with two layers of sheet rubber and also pack the uterus round so as to completely isolate it. The catgut must be irreproachable on account of the amount buried, and in this matter I am grateful to Prof. W. Bulloch for having invented Chorda catgut.

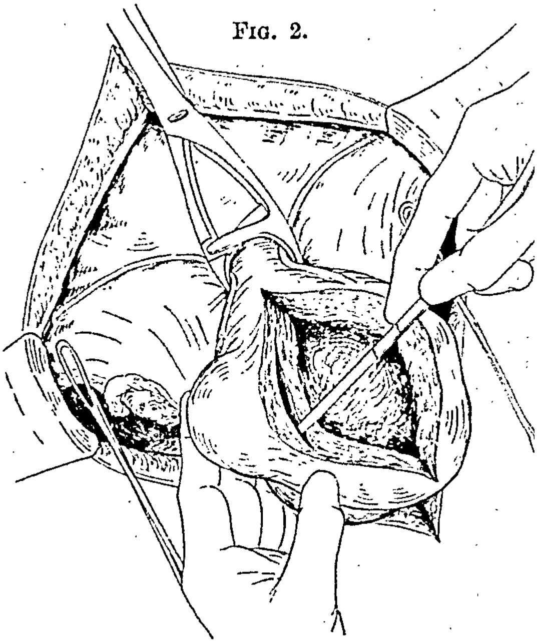
Hæmostasis.—The main drawback to the operation in the past was the bleeding from the uterus over which the surgeon had no control. For myomectomy to be ideal it requires to be almost bloodless, for anything like profuse oozing so blinds, hampers, and hurries the operator that the removal of the fibroids and the reconstruction of the uterus afterwards cannot be neatly done. Nine years ago I designed a clamp (Fig. 1) which compresses both uterine arteries at once, so that with a ring forceps on each ovario-pelvic ligament all the four main arteries of the uterus are blocked and the operation is carried out on an almost bloodless organ. This advantage has revolutionised the operation as far as its ancient difficulty was concerned, for the operator can work as deliberately as he chooses, and if finally he finds that he cannot make a satisfactory job, the patient, who has lost practically no blood, is in perfectly good condition for hysterectomy. The clamp is applied from the pubic end of the abdominal wound, and it is essential that the round ligaments should be included in its grip, otherwise the tightening causes it to slip down on the conical cervix until finally it is compressing the end of the vagina below the uterine arteries. If the round ligaments are included this cannot occur. I did not appreciate this when I originally designed the instrument, with the result that the blades as first made are too small. The clamp and the forceps on the ovarian vessels are not removed until the suturing of the uterus is completed. When they are taken off the uterus flushes up like a limb after a tourniquet is removed and the immediate effect is a certain amount of oozing from the suture holes. The uterus should be returned its place and let to lie there until the flush has s sided, after which it will probably be found t the oozing has ceased. If it has not, an additional suture or two should be inserted at the oozing points.

FIG. 1.



Applying the myomectomy clamp. Ring forceps placed on the ovario-pelvic ligaments.

FIG. 2.



Making a secondary incision to remove a lateral fibroid.

I have frequently been asked whether the clamp may not damage the uterine vessels and promote thrombosis and embolism. The happening is imaginary, for the vessels are too well protected by the tissues in which they are embedded. The one death I have had from pulmonary embolism in my series is no more than might have occurred if the operation had been hysterectomy instead of myomectomy.

Reverdin's Needle.—The operation is much facilitated by the use of this instrument, which is better suited for the insertion of deep mass sutures than the ordinary surgical needle.

INCISIONS AND SUTURES.

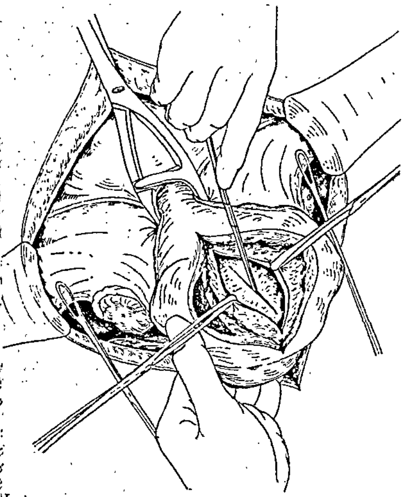
The Primary Incision in the Uterus.—Whenever possible this should be single and median through the front wall of the uterus. Alexander enunciated this principle in 1898. The reason is that every incision through the peritoneal coat of the uterus carries with it the risk of post-operative oozing and adhesion afterwards. The number of such incisions should therefore be kept as low as possible. An incision in the front wall, if it oozes, merely does so into the utero-vesical space and only the bladder adhere, whereas one on the posterior wall oo directly into the general peritoneal cavity and i adhesions form small intestine is the most likely thing to adhere. Another great advantage of the anterior incision is that if it seems desirable the surgeon can bring it up against the anterior abdominal wall by ventrofixing the uterus along the line o suture, or he can oppose it to the posterior surface of the bladder by shortening or pleating the round ligaments or by the "sling" operation; or he may cover it by a flap of peritoneum brought up from the lower uterine segment. The covering of a posterior incision so as to protect against the risk of intestinal adhesion is less easy to effect.

Secondary Incisions.—Tumours not directly accessible through the median anterior incision are reached by secondary incisions. As Alexander pointed out, fibroids are sufficiently movable in the uterine wall to allow of their being pushed towards the opening through which it is desired to extract them. Thus not only anterior fibroids off the middle line, but fibroids lying in the lateral walls and even (if not too large) in the posterior wall can be pushed round to meet a side track made by the scalpel from off the primary incision (Fig. 2).

Tumours in the Posterior Wall.—Many posterior fibroids, especially if large, cannot be reached this way. In cases of this sort the surgeon must adopt either what I call "transcavity enucleation" or perform the "hood operation."

On Opening the Uterine Cavity.—In the majority of cases of myomectomy it is desirable to open and explore with the finger the uterine cavity, for otherwise it is quite easy to miss a small submucous fibroid or a mucous polypus and thus perhaps leave behind the chief cause of the menorrhagia for which the operation is being carried out. The opening of the cavity will not increase the risk of the operation unless the uterus is already infected, in which event myomectomy should never be attempted.

FIG. 3.

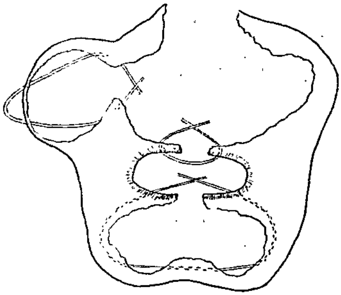


Incising the posterior endometrium over a posterior fibroid.

"Transcavity" Enucleation.—The cavity of the uterus is opened through its front wall either by incising the bed of the anterior enucleation cavity if there is one, or by deepening the primary anterior incision if there is not. The cavity having been explored, its posterior wall is incised over the fibroid, which is then enucleated into the cavity and so out through the primary anterior incision (Fig. 3).

Reconstructing the Uterus.—A uterus in which is embedded a fibroid or fibroids of any considerable size is more or less hypertrophied, so that after the tumours are removed an organ is left of abnormal bulk. Involution occurs after myomectomy as after pregnancy, but not so vigorously, so that some reduction in its size depending on the degree of hypertrophy is advisable before it is finally sutured. To return to the abdomen an organ free of fibroids, but so large as to be beyond the capacity of involution, is to run the risk of menorrhagia persisting after the operation. Moreover, a very bulky uterus is not only more difficult to suture but carries with it an increased risk of post-operative oozing. A certain amount of the uterine tissue therefore needs to be cut away in many cases. The degree and fashion of removal is a matter of judgment, and, moreover, the hypertrophy is often unequally distributed. The surgeon in doing it therefore must have regard to certain fixed points, like the roots of the tubes and the take off of the round ligaments, otherwise he will find he has fashioned an asymmetrical organ.

FIG. 4.



Methods of suturing enucleation cavities.

Suture of the Enucleation Cavities.—To obliterate the enucleation cavities catgut should chiefly be employed, silk being reserved for points where considerable tension is thrown on the tissues. In my earlier papers I advocated the free use of matress sutures. It was a mistake, as this form of suture interferes with the blood-supply of the tissues superficial to the suture, and I lost one case from necrosis of the uterine wall in consequence of this. I now only employ matress sutures sparingly and often not at all. For the closure of median anterior cavities I use a row or sometimes tiers of simple through-and-through sutures, and finish off the superficial part of the incision by a continuous stitch. Anterior cavities off the middle line can usually be included by the through-and-through sutures, especially if part of the anterior wall has been cut away. Cavities in the lateral wall can often be obliterated by separate sutures passed through the tissue that surrounds them and tied across the mouth of the cavity. When, however, the cavity approaches very close to the peritoneal surface another device is required. A suture is passed from the cavity through the peritoneum forming its floor and then back again, the two ends are then passed through the stouter tissues bounding its mouth so that when the suture is tied the peritoneum is drawn into the cavity and obliterates it. Several of these sutures may be used. Cavities in the back wall whose mouth opens out on to the posterior endometrium after "transcavity enucleation" can be closed by sutures passed through the tissue surrounding them and tied on the endometrial surface. The knots are well tolerated. If, however, as already described for lateral cavities, the peritoneum has been closely approached, the inturning device should be applied (Fig. 4).

The Hood Operation.—When a fibroid in the posterior wall is too large for "transcavity enucleation" the following technique may be adopted. An incision is made transversely across the uterus just posterior to the line of the tubes, and the capsule of the tumour having been opened it is enucleated. The portion of the uterine wall that covered it now hangs down behind, like the hood of a monk when it is thrown back off the head. By means of several series of sutures this hood is now brought forwards over the fundus and down the anterior wall, until when the suturing is finished the whole of the superficial suture line lies U-shaped on the anterior wall with its lowest point just above the bottom of the utero-vesical pouch. The hood is almost invariably thick and requires a good deal of planeing away before it fits over the uterus neatly. This is a very pretty and successful operation, and avoids the long incision down the posterior wall which a direct approach to the tumour from that surface would entail (Fig. 5).

FIG. 5.

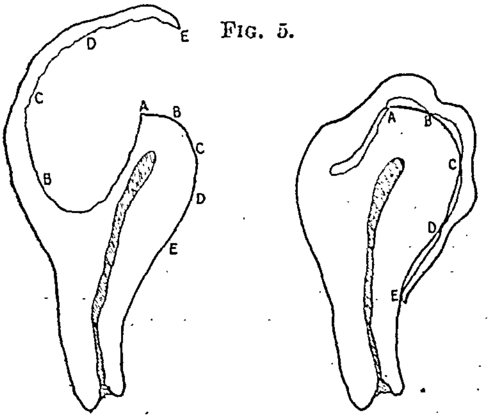


Diagram to illustrate the hood operation.

Posterior Primary Incisions.—There are some posterior fibroids that cannot be extracted through an anterior incision, most notably small ones that lie immediately under the peritoneum. These have to be removed by an incision over them. The best way to close these cavities is to place a purse-string suture around but some little distance from their mouth. The suture when tied invaginates the peritoneum which obliterates the cavity and leaves nothing on the posterior peritoneal surface but the knot. Occasionally, however, all such devices fail, and a sutured wound has perforce to be left fronting back on the intestines. If it is situated low down the best thing is to attach the pelvic colon to it lightly by a few catgut sutures as the adhesion resulting will do no harm. If, however, the uterine wound is too high up for this the mesosalpinx or even the whole appendage may be swung in and sutured to it so as to cut it out from the general peritoneal cavity.

MYOMECTOMY BY BLOCK EXCISION.

There are certain cases in which the uterus is beset with so many fibroids that none of the foregoing devices is applicable. In such, if myomectomy is decided upon, the method of block excision is available. The surgeon, having secured all four arteries as already described, splits the uterus into two halves by a median sagittal incision. The opened cavity having been examined he now, with a finger passed into one cornu, makes certain of the line in which the interstitial portion of the tube is running, and then proceeds to cut away a wedge-shaped mass which includes both uterine wall and its contained fibroids. Before cutting it away he should mark out with the scalpel the line along which he intends to cut, paying attention to the position of the round ligament and the root of the tube. He then repeats the proceeding on the other side. The uterus now consists of two much reduced halves from which perhaps a few more fibroids need picking out. These halves he then proceeds to suture together. The sutures uniting the posterior wall should be tied on the peritoneal surface, but the posterior endometrium should be separately united by a series of sutures tied on the mucous surface. Similar sutures, but tied in the depths of the anterior wall, close the anterior endometrium, and then the anterior wall itself is sutured. Finally a continuous suture is inserted beginning at the lower end of the incision on the posterior wall and continued over the fundus down the anterior wall. This operation, which is a derivative of utriculoplasty, enables a very large number of tumours to be dealt with adequately, but it has the disadvantage of leaving a great length of suture line opposed to the intestines.

CERVICAL FIBROIDS.

A fibroid growing in the supravaginal cervix prevents the clamp that secures the uterine arteries being applied and therefore makes the case more difficult for myomectomy. If the tumour is not large and there are others in the uterus, that in the cervix should be enucleated first, after which the clamp can be applied and the others removed. When, however, the cervical fibroid is large and of the variety called "central" the problem is much more serious, because in addition to the hæmorrhage it is difficult to deal with the immensely elongated and hypertrophied cervix that remains after the enucleation. If myomectomy is decided on the best technique is to clamp both the ovarian and the uterine arteries on either side by long slender bowel clamps applied from the tops of the broad ligaments downwards. The uterine arteries being considerably raised by the tumour below them enables this to be done. The loose peritoneum on the front of the uterus should then be reflected back, and the bladder with it, after which the uterus should be incised medially from the fundus down to the capsule of the tumour. If possible this incision should be limited to the anterior wall, but it may be necessary to bisect the uterus. The fibroid is then shelled out and as much as seems necessary of the redundant tissue of the cervix cut away. Great care must be exercised in doing this not to injure the bladder or the ureters. The remainder of the cervical tissues is then drawn together with sutures placed wherever possible so as to shorten the cervix. All bleeding having been stopped, the uterus above is sutured and the peritoneal flap brought back so as to cover most of the suture line. Myomectomy may be a formidable operation in cases of central cervical fibroids such as I describe. Fortunately they are rare.

Myomectomy on the Pregnant Uterus.

Conservation is most of all merited when the uterus is pregnant, for then the proof of its functional value stares the surgeon in the face. Where the child is not yet viable and the fibroid or fibroids are conveniently placed and not too numerous they may be removed without disturbing the pregnancy. A miscarriage may ensue, but it is remarkable how rarely this happens. Nine is the largest number of fibroids I have been able to remove and leave the pregnancy intact. When, however, the tumours are many and ill-placed, it is impossible to enucleate them without first removing the pregnancy. Several women on whom I thus operated had a living child afterwards.

If the child is viable it should be delivered through the primary incision before touching the fibroids so that the myomectomy clamp can be applied before the enucleation is started upon. In many of these cases the procedure is quite straightforward, but there are others in which careful consideration is required before starting on the conservative operation, notably those in which to get at the child it will be necessary to cut through a large mass of tumours in front of it. Under such circumstances the uterus may be immensely hypertrophied and vascular, and as the head of the child prevents the myomectomy clamp being applied a great quantity of blood is lost in a very short time. I have already referred to the two fatalities in my series due to this cause. If myomectomy is decided upon, the uterus should be eventerated first, and after the ovarian vessels are secured by forceps, an area in the fundus clear of tumours should be sought for, and the child extracted through it, after which the myomectomy clamp can be applied and the removal of the placenta and fibroids proceeded with. If the surgeon has any doubts as to his ability to carry the operation through or the patient's capacity to stand it, hysterectomy should be done.

Conclusion.

My statement that cases of fibroids beyond the scope of conservative surgery are uncommon must not be interpreted to mean that myomectomy is the operation of choice in the majority of patients suffering from these tumours. Myomectomy varies immensely in magnitude in different cases, being sometimes much easier than the corresponding hysterectomy, and sometimes much more difficult. For women over 41 years of age it is only to be preferred to hysterectomy when obviously the lesser operation of the two, or when the patient for reasons of her own wishes it. For women of 41 and under it should, broadly speaking, be the operation of choice, but there are exceptions. The patient may desire the removal of the uterus either to free herself of the possibility of conception or to escape the monthly annoyance or pain of the periods, or she may present such extreme anæmia as to render continuance of the menses (however scantily) undesirable.

Myomectomy should not be performed unless the uterus, apart from its contained fibroids, is reasonably healthy, nor ever unless the surgeon feels sure that the fibroids themselves present no suspicion of malignancy. Of this last possibility I had a sad lesson. I was asked to perform myomectomy on a young and attractive lady. I removed a number of tumours and noticed that they had an unusually glassy appearance, but the pathologist merely reported a high degree of degeneration. As the event proved, they were sarcomatous and very rapid recurrence took place of which she died.

The various forms of non-malignant degeneration—"red" myxomatoid, hyaline, cystic, nævoid, and so *forth—do not in the least contra-indicate conservatism*, and this is specially noteworthy of "red" degeneration with which pyrexia is so often associated. I have with impunity enucleated such fibroids on many occasions.

Summing all these considerations, the one against the other, it is apparent that whilst hysterectomy is still the operation most frequently called for in the treatment of fibroids the sphere of myomectomy is a large and very important one. Despite, however, the fine work of Leith Murray[5] and certain other gynæcological surgeons who have done me the honour to follow my lead, this fact is very inadequately recognised so that, taking surgical practice at large, a number of women yearly are still condemned to lose their wombs when the equally safe and more beneficent operation of conservatism should be in the surgeon's repertory. A procedure which on technical grounds alone affords an opportunity for individual ingenuity and craftsmanship compared with which routine hysterectomy is as mere mass production should need no urging. The barriers set round myomectomy in the past have been swept away *and a new territory is added to the domain of* surgery for those who will enter on it.

ÆTIOLOGY OF PEPTIC ULCER.*

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Sudan Medical Service.

Some two years ago two articles on the treatment of peptic ulcer appeared in the same number of a current medical journal. In the first, an eminent physician proclaimed that cure was possible by medical means and, except in rare cases, deprecated any surgical interference. In the second, an equally eminent surgeon insisted on the necessity of surgery, and surgery of a much more radical type than had been the custom—partial gastrectomy in place of gastro-enterostomy. This violent discrepancy of opinion would seem to justify yet another addition to an already vast and unwieldly literature.

Since it is impossible to give within the confines of this paper even a brief summary of all the literature, I only propose to set out the impressions formed by a fairly extensive study of recent communications.

Although the site of a peptic ulcer is of obvious clinical importance, the factors concerned in its production and behaviour seem to be the same whether it is found in the stomach or duodenum, at the site of a gastro-jejunal anastomosis or even in a portion of ileum which contains, by some strange developmental error, a segment of gastric mucosa—it is an ulcer arising in an area bathed by an acid juice containing the ferment pepsin.

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[5] Jour. Obst. and Gyn. Brit. Emp., xxxiii., No. 2; Edin. Med. Jour., 1930, xxxvii.

* Abstract of a Stephen Scott Essay, University of Durham College of Medicine.

Review of Experimental Work.

ACUTE ULCER.

It is stated by Pulvertaft[1] that there are at least 50 methods of inducing acute gastric ulcer in the rabbit, and that, in addition, spontaneous ulcers are not infrequent. This is in striking contrast with the difficulty of producing chronic ulcers experimentally. It does not seem helpful to use the various synonyms—"erosion," "hæmorrhagic erosion," and so on—for acute ulcer, and those terms will not appear further. In most, if not all, experimental ulcers the initial lesion is a submucous hæmorrhage which tears off part of the mucosa; this is followed by the eroding action of the peptic juice, a small-celled infiltration, and, if the animal survive, healing by fibroblastic cells and regeneration of the mucosa. All these stages have been observed by many workers, but the methods of their production have been varied in the extreme.

As early as 1857 Lebert produced acute ulcers of the stomach as part of a general pyæmia, and since this time the oral, intravenous or intraperitoneal administration of the most diverse organisms, ranging from a hæmolytic streptococcus to a meningococcus, has produced similar results. There is a close parallel between these experiments and the acute ulcer appearing in man as an incident in a generalised infection which may also be of the most varied description, from pulmonary tuberculosis to streptococcal septicæmia.

Perhaps the most interesting method of inducing acute ulcer is that devised by Bolton,[2] who employed local injection of gastrotoxic serum. A serum active against the guinea-pig was prepared by injecting a rabbit with the gastric cells of a guinea-pig, and a similar serum active for the cat was produced from a goat. The principle of cytotoxins has been very fully worked out, but at the moment throws little light on the ætiology of ulcer in man. Ultimately it may be possible to trace the relationship between gastrotoxic serum and histamine, a natural product of protein disintegration. McIlroy[3] reported acute ulcer in the stomach of a cat which had been given subcutaneous injections of histamine for some other purpose. He also showed that histamine produced some extension of lesions artificially induced in the gastric mucosa, although he failed to produce anything like a chronic ulcer. Büchner[4] obtained acute ulcers in rats by a combination of starvation on alternate days and histamine injections. My own experience of histamine is detailed below. The action of histamine is not fully understood, but it is clear that it has a specific dilator action on capillaries, and also that it increases gastric acidity.

Acute ulcers have been reported after stimulation of the sympathetic, and it is even suggested that ulcers which have followed pyloric occlusion and the more radical surgical procedures of Mann are due to some interference with the nervous control. This suggestion far outstrips the evidence, especially as the splanchnic nerve, although it conveys motor impulses to the pylorus, is inhibitory to gastric secretion. Sherren[5] states that "interference" with the vagi produces acute ulcer, but no definite evidence on the point seems to exist and the results of section of these nerves fail to support this view.

Acute ulcers have frequently been produced by such diverse procedures as adrenalectomy, thyroidectomy and partial hepatectomy; but the rationale of all these experiments is that such radical operations cause extreme debility, and that there is a high incidence of acute ulcer in weak and debilitated animals from whatsoever cause.

Magee[6] has produced acute ulcer in cavies by diets deficient in inorganic constituents and vitamins. It seems desirable to regard the acute ulcer of the rabbit and cavie with suspicion, but his results are of especial interest, as the animals showed changes in the adrenals ranging from congestion to frank hæmorrhage.

CHRONIC PEPTIC ULCER.

The means of producing chronic ulcer in animals are as few as the means of producing acute ulcer are many. The tendency of all acute lesions in the stomach is to heal and, although Bolton and others delayed the healing of acute ulcer by such measures as inducing pyloric stenosis or giving acid, they consistently failed to produce a true chronic ulcer.

Dott and Lim[7] and also von der Hutten produced gastro-jejunal ulcers of chronic type in dogs by the operation of pyloric occlusion and gastro-enterostomy. Mann and Williamson,[8] working with dogs and cats, produced ulcers in the duodenum and jejunum by diverting the alkaline secretions into the lower ileum, where they could not neutralise the gastric acid. Ulcers occurred in 90 per cent. of cases and were probably more like clinical peptic ulcers than any experimental lesion previously described. This operation is described as duodenal drainage. Morton[9] extended the work by excising portions of gastric mucosa in addition to carrying out duodenal drainage. He found delay in healing in 100 per cent. of cases and ulcer in 50 per cent., but these ulcers do not appear to have had the same definite characteristics as those described by Mann.

Although this method is of interest, as enabling the behaviour of peptic ulcer and its response to various therapeutic measures to be studied experimentally, it appears to throw little light on the true ætiology of peptic ulcer in man. Hyperacidity is only the factor which may delay healing, not the initial cause; and the measures adopted to secure this hyperacidity involve a distortion of the normal alimentary mechanism so gross that it can never be paralleled in man. Malnutrition can, in itself, produce ulcer in animals, and Mann admits an initial post-operative loss of weight of 10 per cent. followed by a much greater loss as the animals developed ulcer. This secondary loss of weight is attributed t the effect of the ulcer, but it may be the natura result of malnutrition. It is also possible, as points out, that local malnutrition of the intesti wall, due to interference with its blood-supply, is importance. The operation of duodenal drainage of necessity associated with much trauma, and it tempting to regard histamine, a constant product such trauma, as an associated factor, but at prese this may be a fantastic hypothesis.

Rosenow,[13] who maintains that chronic ulcer c be produced by the injection of streptococci, remai undeterred by this work and is endeavouring isolate his streptococcus from the ulcers of duoden drainage, but his results are not so far available.

Clinical Aspects.

ACUTE ULCER.

The ætiology of acute ulcer, arising as an incide of infection, seems to be fairly clear, but the cause acute ulcer as a symptom-complex *sui generis* is greater problem. Acute ulcer frequently occurs anæmic and poorly-nourished women, but all suc women do not suffer from ulcer, and clearly some yet unknown factor must also be concerned. Oral sepsis is by no means an invariable accompaniment and, even if it is present, there is no proof that it has any specific effect on the gastric mucosa; it may merely have contributed to the general state of debility.

The acute ulcer following burns is of especial interest in view of the experimental lesion following the use of histamine, as it is presumably due to the absorption of toxic products of protein disintegration. Harris[10] reports a case in which an acute duodenal ulcer, together with a large hæmorrhage into the suprarenal gland, resulted from an extensive burn in a child. Possibly the adrenal hæmorrhage may be interpreted as the result of intense activity of the gland in its effort to compensate for the various toxic products from the site of the burn. Adrenal hæmorrhages were associated with the ulcers produced by Magee in his dietary experiments and in one of the histamine experiments described below. These rare ulcers have usually been found in the duodenum, but D'Ewart[11] describes a case of gastric hæmorrhage following burns in a child. He makes no mention of the condition of the adrenals, and states that the gastric mucosa showed no ulcer but merely punctiform hæmorrhages; but frequently in such cases ulcer can be seen only by careful search with a hand lens, and this does not seem to have been carried out.

CHRONIC ULCER.

The first problem is to decide the relationship, if any, between acute and chronic ulcer, but at present it seems impossible to infer with any certainty that the chronic ulcer is an acute ulcer of which the healing has been prevented by hyperacidity or other means. The comparatively small area of the stomach and duodenum affected by chronic ulcer, and the fact that the lesion is frequently solitary, might suggest that chronic ulcer is a disease *sui generis.* On the other hand, it may be that the special conditions existing in the ulcer-bearing area are of such a nature that acute ulcer, while healing readily in other sites, fails to do so if implanted in this area.

Wilkie[12] believes with Rosenow that streptococci are the cause of chronic ulcer. He has found these organisms in the teeth, gall-bladder and appendix of patients afflicted with the disease, and has also isolated the organism in pure culture from the base of the ulcer. The ulcer-bearing area contains a large number of lymph follicles, which he regards as providing a nidus for the original infection, inviting a tempting comparison with a similar anatomical arrangement in the appendix, and he believes that the relatively fixed mucosa and precarious blood-supply serve to prevent healing. These facts are very impressive, but he has so far failed to demonstrate a selective affinity of this particular streptococcus for the stomach and duodenum by animal experiment.

Many observers have reported cases of ulcer in which no infection of the teeth, gall-bladder or appendix could be found, and Wilkie himself could not demonstrate them in all cases. It can also be urged that sepsis can act as a predisposing cause as well as an activating agent, and both clinically and experimentally it is clear that ulcer is more likely to occur when the general health is impaired. Modern bacteriological work seems to show the universality of the streptococcus, and there are few people from whom the bacteriologist is unable to obtain a streptococcus from the urine or fæces if not from the mouth or throat. The essential point is to establish the pathogenicity of organisms so recovered, and so far as ulcer is concerned this has yet to be done.

The following statement was made by Rosenow[13] as long ago as 1916, and seems to have settled the problem.

> "Peptic ulcers produced by the injection of streptococci resemble those of man in location, gross and microscopical appearance, and in that they tend to become chronic, perforate or cause hæmorrhage. Streptococci having a characteristic affinity for the stomach and duodenum have been repeatedly isolated from various foci of infection in patients with ulcer and from ulcers themselves. The organisms tend to disappear from the circulation and do not commonly produce marked lesions elsewhere. The organisms have been isolated from ulcers in animals and ulcer has again been produced on their re-injection. Filtrates of these cultures have no special tendency to produce ulcer."

These conclusions are not accepted by all. The search for the septic focus is, of course, sound, as septic foci are better eradicated, but it is probably well to retain an open mind as to their ætiological significance.

GASTRO-JEJUNAL ULCER.

There is considerable dispute as to the frequency of this condition, but Moynihan, in his résumé of the recent collective investigation of peptic ulcer, estimates it as at least 10 per cent.

Finney,[14] with a great experience of gastric surgery, has definite views on the ætiology of this form of ulcer, which he attributes solely to imperfect technique, and it may be of interest to quote the following:

> "By imperfect technique is meant the abuse of clamps in making the anastomosis; the faulty control of bleeding; faulty asepsis; hæmatoma of suture line; the development of kinks and adhesions; in short, the presence of any factor tending to impair the circulation of a localised area of intestinal wall."

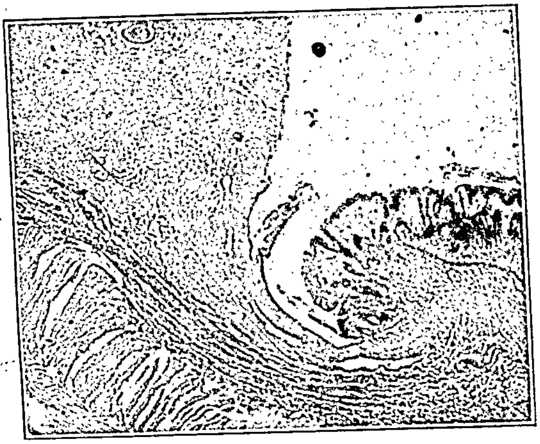
Sherren, also with a large experience, found that jejunal ulcer only resulted in cases where the pylorus had been artificially occluded. He stresses the importance of dealing with any obvious sepsis in the appendix and gall-bladder at the time of the short-circuit operation. Paterson claims that jejunal ulcer has never resulted in his own cases when appendicectomy has been combined with gastro-enterostomy. Wright[15] considered that action of gastric secretion on the jejunal mucosa was the main factor, with the following errors in technique as less important causes: clamps, injudicious feeding, and unabsorbable sutures. Lewisohn,[16] on the other hand, found that in a group of 68 cases the incidence of jejunal ulcer was slightly higher in those cases where pyloric occlusion was *not* carried out. He also states that recent improvements in technique—such as the use of welded needles—all designed to reduce tissue trauma, have not lowered the incidence of jejunal ulcer, which he attributes solely to persistent hyperacidity.

It is to avoid hyperacidity that most continental surgeons carry out partial gastrectomy on all cases of ulcer, but even after this manœuvre secondary ulcer has been reported. Nothing less than complete immunity from jejunal ulcer would seem to justify this extreme measure. If hyperacidity is the cause of jejunal ulcer, it might be expected that portions of jejunum grafted into the stomach would show a high incidence of ulcer, but actually they do not. Until 1927 this experiment had been carried out frequently with negative results, but in that year Takats and Mann,[17] by placing their graft in the ulcer-bearing area, obtained three ulcers out of 25 experiments. This low number of positive results might suggest deficient local vascular supply as a possible cause, and the manipulations are so extremely delicate that it is difficult to exclude this factor. In one of my own experiments an artificially induced ulcer on a jejunal graft placed in the ulcer-bearing area healed perfectly in less than a month.

The experimental ulcers produced by Mann after duodenal drainage and by Dott and von der Hutten after exclusion of the pylorus definitely support the hyperacidity theory. The pylorus admits acid chyme to the duodenum in a periodic manner, allowing time for neutralisation to occur, whereas the stoma of a gastro-enterostomy has no such selective action. It is also claimed that the stimulus for secretion of the alkaline juices is the presence of acid chyme in the duodenum, although more recent work seems to diminish the importance of this process. It is of interest to note that no case of secondary ulcer has ever been reported after pyloroplasty. On the other hand, attention has been drawn to the fact that duodenal drainage does considerably more than give the acid free play, and the work described below on pyloric occlusion in the cat did not confirm the results of Dott and von der Hutten.

After most careful consideration of the available evidence it seems reasonable to suppose that gastro-jejunal ulcer is due to the continued operation of the unknown ætiological factor of peptic ulcer. Attempts may be made to control post-operative acidity by suitable diet and drugs, or by the more heroic method of gastrectomy, but this factor remains, and jejunal ulcer continues to arise. It is, of course, clear that hyperacidity favours ulcer, and therefore attempts to control it are laudable; it is not contended that tissue trauma or bad technique are of less importance in gastric surgery than elsewhere, but it is maintained that attention to these aspects has not solved the problem of ætiology.

FIG. 1 (Cat 77).

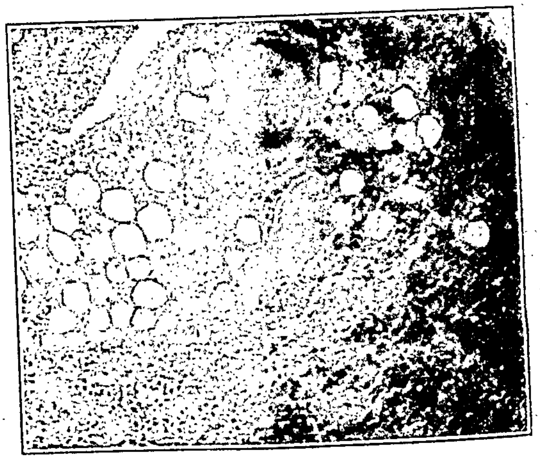


Section of ulcer formed after local injection of histamine. (× 20.)

Author's Experiments.

The cat was chosen for my experiments, as a plentiful supply was available; it can be fed in a more varied way than the larger rodents and, unlike those animals, it does not suffer from spontaneous peptic ulcer. The gastro-intestinal tract of the cat is large enough to permit of various surgical procedures, although, of course, greater delicacy is needed in such an operation as entero-anastomosis than in man or the larger animals. Certain special difficulties attended the course of the work, one of the most irksome being the liability of cats kept in confinement to die suddenly and without obvious cause. In these cases the most complete post-mortem failed to demonstrate any cause of death, and several cases were referred to a very competent pathologist with the same negative result. Much of the work was done under conditions of extreme heat, the shade temperature at times exceeding 110° F., so that post-mortem decomposition took place rapidly. Whenever possible, an immediate examination was made, but when circumstances forbade this the animal had to be discarded, as post-mortem changes obscured any pathology present; therefore, although the series included 80 cats, the number of effective experiments was rather less.

FIG. 2 (Cat 77).



Section of ulcer. (× 150.)

GENERAL TECHNIQUE.

The area of operation was shaved, washed with spirit-soap, and painted with iodine; instruments were boiled, except knives, scissors, and needles, which were kept in spirit, as was the linen thread, which was used for all sutures in the stomach, and also for closing the abdominal wound. During the operation the instruments were placed in 1/20 carbolic, and the operation field was surrounded by a carbolised towel. The abdominal wound was closed by two continuous sutures, one for the peritoneum and one for the skin, painted with iodine and collodion and left free of any dressing. The anæsthetic was ether by the open method.

This technique, and possibly the high resistance of the cat to sepsis, ensured healing of the abdominal wound by first intention in almost every case; the few exceptions were mainly among the group which were given histamine injections.

Only one complication ensued as a direct result of linen thread sutures, and that was a stitch abscess in the stomach wall of cat 65. The skin suture was usually extruded within a month, but at times remained in situ for as long as three months. The suture in the abdominal wall invariably persisted, as did the subserous sutures. Sutures between the mucous edges were gradually extruded, and this process was almost complete by the third month, and in certain cases much earlier.

The experiments included gastro-enterostomies—with occlusion of the pylorus and "en Y"—gastric transplantation of jejunal mucosa, and the production of ulcers by a ring, by section of the vagi, by adrenalectomy, and by subcutaneous and local injections of histamine. The last group will be described.

LOCAL INJECTION OF HISTAMINE INTO STOMACH WALL.

Attempts to produce a chronic type of lesion by subcutaneous injection having failed, it was decided to resort to local injection of the drug in the same way as Bolton used his gastrotoxic serum.

RESULTS.

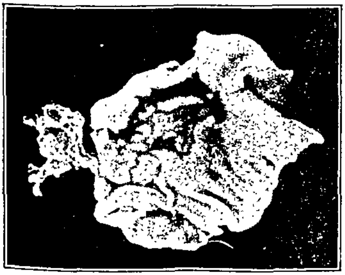
Cat.	Dosage in cg.	Method of injection.	Survival in days.	Course and post-mortem finding.
67	1	Local.	7	Cat remained well; site of injection normal.
68	1	Local*	7	„ „
76	2	Local†	6	„ „
77	3·5	Local†	6	Cat remained in good health and ate normally. Site of injection was occupied by raised hæmorrhagic area size of a halfpenny; surface resembled a ripe raspberry. Microscopical appearances described below and shown in Fig. 2.
78	3·5	Local†	39	Cat in poor condition for last 20 days of its life; continued to eat but in smaller amount with less avidity than usual; no hæmatemesis or melæna was observed. Site of injection was occupied by a large indurated ulcer, shown in Fig. 3. Adjoining ulcer was an elongated submucous hæmorrhage which shows well in photograph. The rest of the mucosa and all other organs normal.

* Thereafter similar subcutaneous dose daily.

† Thereafter one twice daily by subcutaneous route. Starvation on alternate days.

Technique.—The stomach was exposed and with a fine hypodermic needle 1 c.cm. of histamine solution was injected into the muscular layer of the stomach wall. The site chosen was on the lesser curvature near the pylorus, and to the right of it a control injection of sterile normal saline was given. The immediate reaction was rather more marked than in the case of subcutaneous injection, but recovery was rapid and there were no deaths in this series, all animals being killed by chloroform. After operation normal diet was allowed.

FIG. 3.



Ulcer formed after local injection of histamine. Note edge of ulcer and elongated submucous hæmorrhage.

Ulcers of Cats 77 *and* 78.—As these ulcers were the most remarkable finding in the series, they will be discussed in some detail. The ulcer of cat 77 shows an earlier stage of the same process as is seen in cat 78. Microscopically (Figs. 1 and 2) there is swelling of the mucosa accompanied by dilatation of the capillaries and small vessels, and an intense cellular reaction. (The fat cells seen in the upper part of Fig. 2 are probably an accidental inclusion.) It is clearly the separation of this turgid mucosa which has led to the ulcer seen in Fig. 3. On comparing the section with one taken from an acute ulcer resulting from subcutaneous injection of histamine, the main difference is the absence of cellular infiltration and capillary dilatation; the reaction is much less intense.

The ulcer of cat 78 (Fig. 3) resembles very closely a chronic ulcer as seen in man; there is a raised edge surrounding an irregular crater, the base of which is formed by the muscular coat. In the centre of the crater there is a small island of mucosa which has escaped destruction, and to one side there is an elongated submucous hæmorrhage which in the fresh state was a bright red streak. This hæmorrhage illustrates the process by which this type of lesion is produced, and had time permitted this area would have been included in the ulcer.

The only experimental ulcers which in any way resembled those just described were the gastrotoxic ulcers reported by Bolton. The main difference seems to be that in his ulcers the cellular and vascular reaction was much less intense but, as the plates in his book are the only present basis of comparison, it is difficult to make a very definite assertion. His gastrotoxic ulcers were a specific result of a specially prepared serum; this reproduction of a specific effect by a substance so protean in its origins as histamine is of more than passing interest.

The experiments which I have summarised show that it was possible to produce the various stages of acute ulcer by injections of histamine, and in this group an ulcer having the appearance of a chronic ulcer has been described.

The gastrotoxic ulcers healed, despite all efforts to delay that process; the fate of the solitary histamine ulcer will form the basis of further investigation.

Discussion.

The histamine ulcers, more especially the two of solitary type, were by far the most interesting lesions produced. Histamine is a product of protein disintegration and is produced by dead bacteria as well as by dead tissue; it seems to be a factor common to all the multitudinous methods which have been employed to produce ulcer experimentally and to the various processes which have been supposed to produce it clinically; it is a factor which links the simple injection of serum used by Bolton with the grossly mutilating surgical experiments of Mann; it is present in the cultures of streptococci employed by Rosenow; it is absorbed from the burnt surface of the skin; it is present in the various septic foci whose removal occupies so prominent a place in the present-day therapy of the disease. Whether in this view of histamine imagination has far outrun discretion, only the future can decide.

I am indebted to Major R. G. Archibald for giving me facilities to carry out this work; to him and to his staff for much valuable assistance and advice; and to Mr. O. F. H. Atkey, F.R.C.S., and the Council of the Durham University College of Medicine for permission to publish this paper.

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IRRADIATION OF SCHOOL-CHILDREN.

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A paper by Dr. Dora Colebrook on Irradiation and Health was published in the Special Report Series (No. 131) of the Medical Research Council in 1929. Based on the substance of her report, at the time unpublished, criticisms of light treatment appeared in the preface to the annual report of the Medical Research Council published earlier in that year. These criticisms excited much comment in the lay press, particularly so as light treatment had been used in the case of the King's illness, and apparently with success. Coming from such a source, the criticisms had an inhibiting effect on those who were considering the adoption or the extension of this method.

A NEGATIVE FINDING.

Dr. Colebrook having selected a school in which to investigate the effect of irradiation on the health and development of children, divided these into three groups, two of which were irradiated, the one by a naked arc lamp, the other by a lamp screened with window glass, while the third received no irradiation at all. Records were kept of height and weight, of incidence and duration of colds and allied conditions, of attack-rate of infectious diseases, of occurrence of chilblains, and of progress in school work. The results of irradiation were negative in all respects. In considering the striking discrepancy between these negative results and positive ones obtained by many medical officers at home and abroad, certain facts have to be borne in mind. First the school selected by Dr. Colebrook was not one in the slums of London, where the absence of light is greatest, but one in Willesden, where the conditions are good. Houses there are low-built, roads wide, the selected school modern, well-lit and having a large playground, and the district situated on the side of London where the westerly winds blow the smoke away, and ultraviolet readings are high, as shown by one of us (L. H.), using the acetone-blue gauge. Before any conclusions could justly be drawn such a school had to be contrasted with one situated in a poor district of central London. Secondly, Dr. Colebrook may have overdosed the children with powerful shorter ultra-violet rays. Those experienced in light treatment recognise the ill-effect of over-dosage. The children were irradiated from September to March on three days a week, with an interval at Christmas, and a powerful long-flame arc was used. A ten-minute exposure of 2 ft. 4 in. from the flame "gave a strong reaction with redness lasting for six days" in an adult. But the production of erythema cannot be used safely in children as a test of dosage; the children were put round the lamp at 2 ft. 2 in. from the flame, this being on a level with the middle of the child's trunk. The front and back body surfaces were irradiated on alternate sessions; circles were also painted on the floor at 2 ft. 6 in., 3 ft., and 3 ft. 6 in. from the lamp; the maximum dose was obtained with the children 2 ft. 2 in. away from the lamp for 15 minutes, the arc running on 70 volts and 30 ampères, the minimum dose with the children 3 ft. 6 in. away for five minutes, the arc running on 45 volts and 25 ampères. During the last part of the winter metal-cored carbons were used to intensify the dose. Mr. T. C. Angus measured the ultra-violet radiation of this arc lamp with the aid of a photo-electric cell, and found the strongest intensity to be about nine times that of a new Hanovia mercury-vapour lamp, which had settled down in action, while the weakest intensity used was nearly twice that of this mercury-vapour lamp.

RECORDED POSITIVE RESULTS.

At the Finsen Institute, Dr. Axel Reyn had insisted on the greater utility of the short-flamed arc, which gives relatively more infra-red and visible rays and less short ultra-violet rays. Long exposures are given by Dr. Reyn to such arcs and the patients made to redden and sweat with the heat; such exposure may be terminated by a cold shower bath. The statistics of this Institute show that results have been obtained by means of artificial light as good as those obtained by Rollier at Leysin by means of heliotherapy. Dr. Sequeira, no less, has obtained good results at the Light Clinic at the London Hospital, and Mr. W. S. Duke-Elder has reported very favourably on irradiation as a means of treatment of certain diseases of the eye. Good results had been obtained by Dr. Eidinow and one of us (L. H.) at the Light Clinic which they had got started in the New End Hospital, Hampstead, in which treatment was carried on by Dr. Madders as a voluntary worker. Favourable reports were received, too, by L. H. from several welfare clinics in which light treatment had been introduced on his suggestion. Dr. Murray Levick had obtained extraordinarily good results through irradiation of marasmic children. Favourable experience in regard to irradiation of children had been reported by Gamgee at Hull, Taylor and Griffiths at Aberdeen, and Banks at Motherwell—these among others. There were known, also, the good results of irradiation of animals at the Zoo which had been introduced in accordance with the advice of one of us (L. H.). By the introduction of open-air and artificial light treatment in the new monkey-house tuberculosis has been almost abolished. After completion of Dr. Colebrook's research, which gave negative results in the case of children living in good conditions and treated by short exposures to a powerful long-flamed arc, further research was then obviously indicated on children living under worse conditions and given light treatment with other intensities and times of exposure.

Such research was, therefore, initiated by us in the planning of which any personal bias was as far as possible eliminated by advice of statisticians. The results of this research are now given. The good results obtained by Huldschinsky, Hess and others, through irradiation of rickety children has been attributed to the formation of vitamin D in the skin, and it has been claimed that the giving of vitamin D by the mouth has all the good effect which irradiation has on children and offers a cheaper and easier means of treatment. It was decided to test this as well as the general efficacy of irradiation.

A Controlled Investigation in Derby.

Four areas of the town of Derby were selected—roughly, North, South, East, and West—and a random sample of 100 children were taken from each area. Four groups were formed, each group consisting of 25 children from each area, so that all groups were comparable as regards living conditions. The ages were between 9 and 12 years, and as the groups were formed by random sampling, any effect of age was minimised. The test extended over 16 weeks—from November, 1929, to March, 1930, with a break of a fortnight at Christmas.

Group 1 were given radiation 6 ft. away from a long flame tungsten-cored carbon arc twice weekly. The lamp ran on 85 volts and 15 ampères and the maximum dose was 10 minutes back and 10 minutes front 6 ft. away, about one-tenth of the maximal dose used by Dr. Colebrook, and this given twice, not thrice a week.

Group 2 were given one radiostol pellet at school daily. Each pellet has a dosage of vitamin D equivalent to that in about 2 oz. of a good cod-liver oil.

Group 3 were given exactly similar looking pellets but containing no radiated ergosterol daily, and attended, also for exposure to an arc fitted with a glass screen, twice weekly. This group was put in to demonstrate the part, if any, that psychology plays in the taking of pellets and the mere fact of undressing before a lamp.

Group 4 were controls, who had nothing done for them at all. The children were examined before the test, and the following points noted on the individual chart:—

1 Height and weight.
2. Hair abnormalities.
3. Skin abnormalities.
4. Conjunctivæ.
5. Temperament.
6. Eating.
7. Sleeping.
8. Tonsils and adenoids.
9. Cervical and submaxillary glands.
10. Evidence of gross disease—e.g., T.B. joints, rickets.
11. Liability to any particular disease.
12. Heart and lungs.

Six local practitioners took part in the examination—four of them took the heart and lungs, and two others the remainder. They conferred beforehand, to evolve a uniform method of recording. The treatments were then carried out and the children re-examined by the same doctors who had first examined them, but who were in complete ignorance of the groups to which the children belonged. The test was therefore secret, and the doctors could not be influenced in favour of any particular treatment. Unfortunately there was an epidemic of various infectious diseases in the town during the 16 weeks, which greatly curtailed our numbers, but the following results were based on 250 cases. No deductions were drawn from the following: hair, skin, heart and lung, and dental examinations (separate examination by school dental surgeons).

(a) *Weight.* Average gain in weight in lb. per child:—

Group 1	2·42	Group 3	1·81
„ 2	2·17	„ 4	1·91

(b) *Tonsil and gland group.*

Group.	Total.	
1	33	26 remain the same, 7 improve.
2	29	20 „ „ „ 3 „ 6 worse.
3	38	28 „ „ „ nil improve, 10 worse.
4	27	27 „ „ „

(c) *Percentage improvement in Groups 1 to 4.*

	(1)	(2)	(3)	(4)
Conjunctivæ	30	13	Nil	10
Eating and sleeping	57	45	17	7
Liability to winter complaints, colds, bronchitis	30	21	15	7

(d) Any *improvement on any chart* was marked with a plus, and the addition of these showed the groups to come out as follows:—

Group 1	162	Group 3	70
„ 2	130	„ 4	30

(e) *Percentage of children in each group who improved in any respect:*—

Group 1	80	Group 3	34
„ 2	47	„ 4	24

Conclusions.

Apart from these statistical results, the following deductions may fairly be made:—

1. That marked improvements under any particular heading, or class of headings, are always shown in Groups 1 and 2, and not by a small margin that could be due to fortuitous circumstances, but by a really appreciable margin.

2. That in no case do Groups 3 and 4 show better results than 1 and 2.

3. That Group 1 always shows slightly better results than Group 2.

4. That in *no* case, in Groups 1 and 2, was there any retrogression in the health of the children, except in the single instance of glands, for which there was an underlying cause, untreated except by irradiation.

5. The cases which made the really spectacular improvements were in Group 1.

6. The only instances of grateful thanks by parents were in Group 1 (spontaneous thanks noted).

7. The greatest effect on children seemed to be on their eating and sleeping.

8. The improvement has been most marked, in the case of the ultra-violet ray treatment, in the very headings we should most expect it, and slight, or absent, in the gland group, where there are such underlying causes as tonsils, bad teeth, and lice.

9. The period was too short to expect much change in temperament, but many parents reported the excellent effects of irradiation on nervy children, and that some children became naughtier.

Maugham and Smiley at Cornell University report that they have reduced the number of colds almost 60 per cent. among irradiated, cold-susceptible men as compared with the non-irradiated groups. Each man had 15 minutes total irradiation once a week, in an artificial "solarium" fitted with mercury-vapour lamps. There were about 300 receiving regular treatments. Successful results have been obtained by them during the last three winters. In America such "solaria" have been put up in factories. If even half the relief claimed to be given to these university students could have been given to the population at large, what an immense saving would have been effected.

We are indebted to the authorities, the school medical staff, and the local practitioners who took part in the Derby scheme and helped to make this research possible.

MELANOMA FOLLOWING "CRAB-YAWS."

By Clement C. Chesterman, O.B.E., M.D., M.R.C.P. Lond.,
PHYSICIAN IN CHARGE, YAKUSU HOSPITAL, BELGIAN CONGO.

During the ten years 1921–30 eight cases of malignant disease have been diagnosed among Bantus of various tribes at the hospital of the Baptist Missionary Society at Yakusu, near Stanleyville in Belgian Congo, and three of these (37 per cent.) were cases of melanoma arising from the skin of the sole in adult males. The total number of cases seen during the period was about 40,000 and it is noteworthy that only eight cases of malignant tumour were diagnosed (or 1 in 5000 of the total in- and out-patients), and that these included as many as three melanomas of similar origin.

Case 1.—Asisa, aged 35, had an ulcerated tumour, the size of a golf ball on his left heel. He had suffered from "crab-yaws" at this site for many years. There were small glands in the groin. The tumour was amputated and was almost wholly black on section. The patient was lost sight of.

Pathological report (by the kindness of Dr. H. B. Newham of the London School of Hygiene and Tropical Medicine) confirmed the clinical diagnosis of "melanotic sarcoma" of low malignancy with a considerable degree of fibrosis.

Case 2.—Ilenge, aged 43, had an ulcerated tumour the size of a tangerine orange in the middle of the sole of the left foot, which had been the site for some years of crab-yaws. Large crural glands were found. The patient was weak and emaciated. The tumour was amputated and was uniformly black on section. A month later the crural glands broke down and a black discharge exuded from two or three sinuses. The patient died from exhaustion and secondary deposits in lungs and liver.

CASE 3.—Liusola, aged 45, had an ulcerated tumour the size of a cricket ball growing from the ball of the right foot, which had previously been affected by crab-yaws for many years. The tumour had first been noticed 18 months previously. Large hard crural glands were found. The tumour was amputated, with a wide clearance of all surrounding skin, which showed a thickened pigmented layer. About 12 black glands, varying in size from a pea to a pigeon's egg, were removed by wide dissection round the femoral vessels. Two months later the foot wound had cicatrised and the patient had gained 5 kg. in weight.

Three cases of undoubted melanoma of low malignancy occurring in adult males, arising from the skin of the sole (which is normally no more pigmented in negroes than in Caucasian stock), seem of special interest in that they appear to have a common carcinogenic factor in the prolonged irritation due to crab-yaws. This is a chronic granulomatous condition beneath the skin of the sole or palm which may appear some years after the generalised secondary eruption of yaws and, owing to the thickness of the epidermis, tends to persist as an open fissure or ulcer. It seems therefore that the *Treponema pertenue* of yaws must be regarded, like its congener *T. pallidum* of syphilis, as a potential carcinogenic agent, producing as it does chronic fibrosis and hyperkeratosis.

In searching for any other possible factor in these cases I learnt that a native remedy enjoying a great vogue is the holding of the foot affected with crab-yaws in the hot smoky flame produced by burning some powdered resin, of a type commonly used as an illuminant, in a little hole in the ground. The soot from this burning resin is deposited in the ulcer and a hard coagulum is formed, which apparently is successful, not infrequently, in promoting healing. Occasionally the thickened skin is scared by the flat blade of a knife heated in the fire. The third patient admitted on interrogation that he had resorted to this practice just before the development of the tumour, and subsequent investigation leaves me with very little doubt that the other two cases had made use once, if not more often, of this popular remedy. Bearing in mind the well-known carcinogenic properties of soot, tar, paraffin, and mineral oils, it is not impossible that this practice may be a contributory factor. Most native medicines for external application contain charcoal and palm oil, and these, with an abundant supply of ultra-violet light, may also exert some influence in the development of malignancy.

References in such literature of cancer among negroes as is available to me lend support to the hypothesis of a relationship between melanoma and crab-yaws. Connor[1] (1929) states that, in hi experience in Bengal, melanotic sarcoma is commone than in Europe, and illustrates a case arising fro the palm which is practically identical in appearanc with the cases here reported from the sole. He doe not refer to yaws, although this disease exists i eastern Bengal. Watkins-Pitchford[2] (1923) note that the natives of Natal are especially liable t "sarcoma of the subcutaneous tissues of the foot." In the précis of his paper it is not clear whether h refers to melanoma or not, nor is crab-yaws mentioned as a possible factor, although yaws is endemi in Natal. Adler and Cummings[3] (1924) record case of melanotic sarcoma in the foot of a Wes African negro.

REFERENCES.

1. Connor, Sir F. P.: Surgery in the Tropics (London) p. 26
2. Watkins-Pitchford, W.: Med. Jour. South Africa, 1925, x 257.
3. Adler, S., and Cummings, E. H. T.: Ann. Trop. Med. an Parasit., 1923, xvii., 535.

Refs. 2 and 3 are from abstracts in the Tropical Diseas Bulletin.

CLINICAL AND LABORATORY NOTES

INSULIN PHOSPHOTUNGSTATE BY MOUTH.

BY R. D. LAWRENCE, M.D. ABERD., M.R.C.P. LOND.,
CHEMICAL PATHOLOGIST, KING'S COLLEGE HOSPITAL (IN CHARGE OF DIABETIC CLINIC).

IT has recently been reported by Mukherjee[1] that a compound of insulin and phosphotungstic acid is active when taken by mouth. The positive evidence was obtained by the production of hypoglycæmia in normal rabbits and diabetic patients. More recently O. Leyton has reported to the Royal Society of Medicine encouraging results on diabetics. My investigations have not been encouraging and fail to demonstrate that this compound of insulin has any action when taken by mouth.

The substance was tried in large doses on two "pedigree" insulin cases of moderate severity and the results are definitely negative.

Case 1.

	8 A.M.	9 A.M.	11 A.M.	Noon.
Blood-sugar per cent.	0·23— 24 units ..	Breakfast ..	0·154 ..	0·114
	0·25—100 „ .. tungstate.	„ ..	0·436 ..	0·468

Case 2.

	1 P.M.		5 P.M.
Blood-sugar per cent.	0·084— 0 units	.. ..	0·190
	0·123— 5 units	.. ..	0·098
	0·132—100 „	tungstate ..	0·222

Case 1 requires 24 units of insulin injected one hou before a standard breakfast to reduce the bloo sugar to normal at noon. 100 units of insuli tungstate were given by mouth one hour before similar breakfast and did not prevent extreme hype glycæmia. This was accompanied by thirst, polyuri and a heavy excretion of sugar (5·3 per cent.) an ketone bodies.

Case 2 was investigated differently. As th figures show, his blood-sugar rises after lunch in th afternoon when the action of his morning insuli wears off. Five units of insulin injected check this afternoon hyperglycæmia, but 100 units of th tungstate compound by mouth showed no suggestio of insulin action.

These doses were very large in comparison wit the usual amount of injected insulin and therefor the compound seems of no practical value. It ha been known for years that very large doses of insuli administered by mouth in alcoholic[2] solution o with saponin[3] may occasionally have some sligh hypoglycæmic action on the blood-sugar of animal and diabetics. But this action is variable an uncertain and depends on the absorption of som insulin before it is destroyed by the digestive enzymes a factor over which we have no control. Phosphotungstate insulin seems no better than othe forms of insulin by mouth, as might be expected. The chemical nature of the compound, also, would make one fear a toxic action on the kidneys.

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[1] Mukherjee, H. N.: Jour. Physiol., 1930, lxx., 182; see THE LANCET, 1930, ii., 707.

[2] Harrison, G. A.: Brit. Med. Jour., 1923, ii., 1204.

[3] Lasch, F., and Brugel, S.: Archiv f. exp. Path. u. Pharmak. 1927, cxx., 144; 1927, cxxii., 284.

I am once more indebted to Mr. F. H. Carr, D.Sc., of the British Drug Houses, for preparing the compound and testing its activity both before and after these experiments.

TREATMENT OF SUPERFICIAL SEPTIC INFECTIONS BY NASCENT IODINE.

By W. E. Waller, M.D. Oxf., M.R.C.P. Lond.

Superficial septic infections of the fingers and hands frequently pursue a chronic course and are most troublesome to treat. One of the most obstinate of these conditions starts as a purulent blister, usually near the tip of a finger or thumb. This is opened, the dead overlying epidermis is cut away, and with simple antiseptic dressings the condition may clear up rapidly. Very frequently, however, the infection "creeps" under the epidermis, raising it as secondary purulent blisters at the margin of the primary one, and this process, once started, shows a strong tendency to extend to and infect the nail-fold. Once established here, it may persist as a mild septic onychia for many weeks, causing prolonged disability. Sometimes the process appears to heal, only to reappear again shortly as beads of pus under the nail-fold. If the nail-fold is cut away together with the nail base, if pus has travelled beneath it, healing occurs forthwith, but such a procedure renders necessary some form of anæsthetic, and since the local injection of novocain round the base of the finger or thumb, though entirely effective, is not without risk in the neighbourhood of such sepsis, a general anæsthetic is required. These procedures are usually resented by the patient, who does not understand why so apparently simple a condition cannot be cured by simple methods.

For some years I have used the following line of treatment in these cases, the effectiveness of the method being apparently associated with the liberation of free iodine.

1. Soak the part for five minutes in hydrogen peroxide, 10 volumes per cent.
2. Transfer for five minutes to mercuric potassium iodide, 1 in 2000 solution. This solution becomes brown from liberation of iodine.
3. Dress with gauze wrung out of the biniodide solution, cover thinly with cotton-wool, but use no waterproof protective. These procedures are carried out twice daily.
4. Change to dry dressing and omit all dressings at the earliest moment.

If the nail-fold is a deep one, it may be necessary to raise it with an eye spud or similar instrument, and insert small pieces of sterilised rubber tissue to assist drainage. Most cases clear up readily by this method, which is simple and cheap. In my experience boric compresses or fomentations or flavine or other antiseptic compresses frequently fail or appear to do positive harm, but since adopting the method outlined above I have rarely had to resort to operation, unless there is already pus under the nail when the case is first seen.

Similar superficial septic conditions, not involving the nails, have cleared up under this treatment when other methods have failed.

Rustington, Sussex.

MEDICAL SOCIETIES

BRITISH INSTITUTE OF RADIOLOGY.

At a meeting of this Institute on Jan. 15th, Major C. E. S. Phillips, the President, took the chair, and a paper on

Hydatid Disease in England

was read by Dr. J. F. Brailsford (Birmingham). He explained that the chief reason for his communication was the oft-recurring statement by both physicians and surgeons that hydatid disease was rare in this country—a statement with which he now disagreed. He was reading the paper before the Institute rather than a purely medical society because radiologists came more frequently in contact with hydatid disease than anyone else; most of the recorded cases had been seen, at some stage, by a radiologist. Though the disease was not rare in this country, it was much more common in large sheep-breeding areas, such as Iceland, Australia, and the Argentine. The danger lay in animals. For several years he had paid daily visits to the Birmingham public abattoir, and saw many cattle, sheep, and pigs infected with the parasite (*Tænia echinococcus*). Some herds were extensively infested with it, others very little. In most of the cases the cysts were multiple, almost completely destroying the normal tissue, the livers of some of the infected cows weighing as much as 200 lb. instead of the normal 14 lb.

Cases of human infestation were occasionally to be seen in hospital, and there was a great variety of clinical signs arising from the presence of the parasite; this might account for the fact that some 300 articles had appeared on the subject in the last five years. Yet the persistence of cases showed that no concerted effort had been made to eradicate what was a formidable disease, and one which could be as surely banished as rabies had been. In a large number of instances, the prohibition by councils of dogs at abattoirs was not kept, dogs being allowed to enter and consume offal which was very likely to include parasites in some stage, such dogs easily passing along the infection to a human being, especially if much fondled. Slaughter-house refuse was sometimes used for manure, in which the tænia flourished. Foxes were very prone to the disease; a young woman subject had a pet fox, which she taught to receive sugar from between her lips, by which means no doubt she derived the disease. It had been found in the wolf, the jaguar, and other animals of the kind, and he believed that a proportion of sheep-dogs harboured the echinococcus. In Australia active measures had been directed against these dogs, and since they were started the number infested had been showing a diminution. In this country, so far, no concerted action had been organised against this serious disease. He wrote to the Ministry of Agriculture and Fisheries to ascertain what leaflets or pamphlets had been issued on the subject, and their only reply was to refer to a leaflet on sturdy, which, of course, was a different disease.

A very important point was that hydatid disease might exist in a person for as long as ten years before it was suspected; hence it was difficult to date the origin of a case, or to trace the source of contamination. Ordinary house-flies could deposit the worm on food. The echinococcus measured about one-was to treat the disease and leave the pregnancy alone.

Mr. L. Carnac Rivett regarded the combination of tuberculosis and pregnancy as a serious thing. Ernest Ward had published particulars of 423 pregnancies in 237 tuberculous women. In 53 per cent. the pregnancy had no effect on the disease; in 16 per cent. the lesion was improved, in 31 per cent. the tuberculous lesion was rendered worse by the pregnancy. In another series of 422 labours, there was no effect from the pregnancy in 32 per cent., the tubercle was improved in 19 per cent., while in 49 per cent. it was made worse. In 1925 Dame Louise McIlroy read a paper before the Section giving the results in 18 tuberculous cases at the Royal Free Hospital, in which she cast the onus—as the speaker would—on the physicians, as there was so little coöperation between maternity hospitals and sanatoriums, and cases were sent out of sanatoriums before labour became due. Mr. Rivett would go further and say that many patients were discharged from sanatoriums because they were discovered to be pregnant. Dr. R. A. Young had declared that pregnancy was bad for tuberculous lesions, remarking that a lesion was often latent or quiescent during pregnancy, flaring up after delivery. He had expressed himself thus: If a virgin, no marriage; if married, no pregnancy; if pregnant, no confinement; for the mother, no suckling. Morris and Murphy had published 166 cases which were followed up for three months after the termination of pregnancy; in 37 per cent. there was no change, in 18 per cent. there was improvement, in 39 per cent. the patient was worse, and 6 per cent. died. In the presence of active tuberculosis abortion must be practised for the sake of both mother and child. Any woman who was pregnant and had an active tuberculous lesion should receive full sanatorium treatment during the whole of her pregnancy, and for at least six months afterwards. Turning to the effect of the tuberculous lesion on the pregnancy, this was usually uneventful; tuberculosis showed no particular tendency to cause abortion. The child was usually on the small side, 6¼ lb. on the average, and there was no reason to interfere with the labour, especially as anæsthetics were inadvisable. There was no tendency in these cases to post-partum hæmorrhage, or sepsis, or subinvolution. For the tuberculous mother he advocated no suckling. He hoped that, as a sequel of this discussion, the Ministry of Health would be urged to make proper provision for these cases.

DISCUSSION.

Dr. Jane Walker said that in an inquiry she made in 1926 the general trend of opinion was against the termination of pregnancy in tuberculous women; indeed there was practical agreement as to the uselessness, even the danger, of bringing on labour in the later stages. At a discussion in Cambridge the general opinion was that if pregnancy was to be terminated, it should be done by Cæsarean section, an operation which could be performed quickly and with little danger. In only one case of her own was it considered desirable to terminate pregnancy, and that was between the fifth and sixth month. A successful artificial pneumothorax had been induced, and the patient was doing well, but it was felt that the strain of parturition might be prejudicial. She died soon afterwards. As to lactation, to her surprise all the replies were against allowing the mother to nurse her baby; whereas her own view was that it was an advantage to both mother and child that the latter should be suckled by her. As to the treatment of a tuberculous woman during gestation, most of the correspondents thought the pregnant woman should be treated in the same way as *if she were not pregnant*, and with that she agreed. In acute active phthisis, pregnancy was a calamity, and its termination, at any period up to the tenth week, should be entertained. In cases of arrested phthisis, pregnancy had no ill-effect, but the period of lactation should be carefully supervised. The London County Council had under consideration, after consultation with Dame Louise McIlroy and herself, a scheme for tuberculous women to be sent to a sanatorium for confinement and the ensuing six months. But it was found that women objected to going.

Dr. J. S. Fairbairn said he was only prepared with a few impressions. It was only in the early or the recently cured cases of phthisis that termination of the pregnancy arose. He doubted whether it was sound to depend on the advice of physicians, as many of them seemed to regard pregnancy almost as a sort of malignant growth. He admitted, however, that a number of tuberculous women had an exacerbation of the disease after delivery.

Dr. Margaret Salmond analysed some figures from the Royal Free Hospital where a considerable number of tuberculous cases, mostly from Brompton or Grove Park, were admitted for confinement and sent back afterwards. It was, she said, not advisable to put active tuberculous cases in a ward with normal mothers and babies. The ideal would be to have a small antenatal ward, labour ward, and lying-in ward and nursery for tuberculous patients. It had been found that after 16 weeks, if the disease was active, there was but little point in inducing abortion, as the disease was usually aggravated as much by this procedure as if the patient were allowed to proceed to term. For the prevention of future pregnancy, where it was considered undesirable, contraceptive advice was given; but in patients of the hospital class this was rarely carried out satisfactorily. Sterilisation in young patients by X rays and radium had the disadvantage of producing an early artificial menopause, which was undesirable. The babies born of tuberculous mothers were all of good average size, and seemed healthy. Many patients with active disease were sent to sanatoriums after delivery, and the baby was sent home to friends or relatives until the mother improved.

Dr. S. Vere Pearson said that tuberculous patients who were pregnant did well under sanatorium treatment. The mothers themselves objected to being confined in a sanatorium; sanatorium physicians did not object, provided they could find a quiet room apart so that other patients were not disturbed by a child's cries.

Dr. Eric Webb called attention to the energy involved in bringing a child into the world, and the fact that a quick induction of labour caused more reaction and shock than a slow one. There was also a good deal of energy entailed in lactation.

Dr. F. H. Young gave the meeting some particulars of pregnant cases in an artificial pneumothorax clinic. In the past 4½ years he had had 120 women undergoing artificial pneumothorax, chiefly at Brompton Hospital. Eight had become pregnant. In five the pregnancy was detected early and was terminated. In three it was detected late and was allowed to go on. In none of the eight cases did the tuberculosis seem worse after the pregnancy, and he had the opportunity of following them *for six months afterwards*. He induced artificial pneumothorax in three patients who were discovered to have phthisis during their pregnancy, and all of them went through the labour successfully and were no worse afterwards.

Dr. R. A. GIBBONS did not agree with sterilisation of these patients, as there was always the hope that sanatorium treatment would get them well. He favoured leaving to the physician the decision as to what should be done.

Prof. LYLE CUMMINS said the tuberculosis officer often had the question put to him "Should this young woman get married?" He exhibited a table showing that in a large number of cases the health of married women was superior to that of single, divorced, or widowed women, probably because of the shelter of a home and the absence of the need for participating in the struggle for subsistence. In the case of the mother acutely ill with tuberculosis it would of course be criminal to allow lactation. Where the disease was in a condition of arrest, the risk was not worth thinking about. It should be borne in mind that children were more easily infected with tubercle than were adults.

HUNTERIAN SOCIETY.

AT a meeting of this Society on Jan. 19th the chair was taken by Prof. A. W. SHEEN, and a paper on the

Problem of Rejuvenation

was read by Dr. ARNOLD LORAND, of Carlsbad. He said that he had often observed the early appearance of symptoms of old age in people suffering from a lack of hydrochloric acid in the stomach together with an underfunctioning of the thyroid gland and an anæmia. Achlorhydria was known to be associated with myxœdema and with degenerated conditions of the pituitary gland. Anæmia was also well known to be associated with old age and with achylia. The anæmia of old age might be the direct result of thyroid degeneration or of the intestinal auto-intoxication which so frequently followed achylia. The relationship between lack of hydrochloric acid, intestinal auto-intoxication, and cancer had frequently been discussed, but endocrine changes might also play a rôle in the production of cancer. In the few cases where cancer had appeared in young people it had been accompanied by premature old age with achylia and anæmia. Achylia, especially in the aged, meant intestinal intoxication, and both together meant anæmia. All these contributed powerfully to the production of premature old age. Toxic products from the intestines had much to do with the development of high blood pressure and arterio-sclerosis. Old age could be considered as a condition of general auto-intoxication with resulting anæmia and inadequate nourishment of tissues.

The slogan of treatment must be: more blood to the tissues, blood containing all the necessary elements including the hormones and salts. The improved blood-supply must be accompanied by dietetic and drug treatment for the prevention of intestinal auto-intoxication, together with ultra-violet rays to stimulate the endocrine glands and the peripheral circulation. Rejuvenation could be accomplished by these means and especially by a wise selection of diet. Many foods had therapeutic properties superior to those of drugs; according to Carl Haug, spinach was a greater stimulant of hydrochloric acid than coffee and came next to histamine. Foods deleterious to the endocrine glands, and especially to the liver, must be avoided. The worst of these were meat and fats; of all protein substances, meat caused most putrefaction and casein least. If fats were to be used, preference must be given to those which melted most easily. Fat meat arriving in the colon insufficiently digested would stagnate there. The best fats were butter—which actually prevented putrefaction—and fine olive oil. The liver acted best when well stored with glycogen; potatoes, steamed rice, bananas, and sweet fruits were the best source of starch. Starchy food was an active agent against putrefaction, especially if sufficient milk were taken with it. The best milk products were sour milk, yogurth, and acidophilous milk; fresh cottage cheese was also good.

In the general interests of longevity the best diet was milk products, brown bread, vegetables, and fruit, with the addition of a few eggs and fish and only a little meat. Such a diet prevented constipation, and strong cathartics should be avoided. The bowels should be cleared out before treatment was instituted and one of the best methods was the "enterocleaner bath." Food should be daintily cooked and tasty but free from sharp sauces and spices, which were the villainous associates of an incapable cook and a greedy inn-keeper. Badly cooked food was badly digested and might be rejected unused and even contribute to the inadequate utilisation of the better cooked and more valuable parts of the diet. Good cooking ought to be taught in all schools. Coffee did not merit the calumnies levied against it; it might be good for the heart and its blood pressure-raising and uric acid-forming actions had been much over-rated. The wise physician should not be alarmed at a high blood pressure in old age. Transplanted glands were of very doubtful viability and there was no need to transplant a thyroid when it could be given by the mouth. Dr. Lorand had seen a spinster of 48 treated by thyroid and ovarian preparations, iron and arsenic, radio-active mud baths, and ultra-violet rays; menstruation had continued until her 53rd year, and she had looked considerably younger than her age. The best surgical method was the chemical sympathicectomia of Doppler, but even this had only temporary effects. Many grafting operations were undertaken solely to restore sexual efficiency; this procedure was fallacious and based on unjustifiable analogies between rats and man. Impotence was not a normal attribute of old age; it was a disease of the imagination at any age and could be as effectively treated by diet as by operation. The way of rejuvenation undoubtedly lay through the stomach and intestines; as Seneca had observed, more people were killed by the stomach than by the sword. Old age could not be transformed into youth, but youth and the duration of life could be prolonged. It was quite possible to make a man of 65 look 55. The best treatment for old age was its prevention.

DISCUSSION.

Prof. W. E. DIXON said that he was disappointed in being advised to eat olive oil and beetroot—which he loathed—instead of taking some simple internal secretion. Our diet was prescribed by tradition and not by a vicious appetite. He preferred to remain aged than to be rejuvenated by olive oil.

Mr. W. IBBOTSON inquired whether alcohol and tobacco were concerned in old age.

Dr. W. S. C. COPEMAN remarked that both the primary anæmias were known in this country as diseases of early middle age, and suggested that the syndrome mentioned by Dr. Lorand was probably different from the pernicious anæmia of the English

Eagles and D. McClean (London). Subcultures have been carried through seven generations with satisfactory evidence of multiplication in a medium composed of fresh kidney extract, serum, and Tyrode's solution.—Alum-toxoid Precipitates as Antigens, by A. T. Glenny and Mollie Barr (Beckenham). The precipitate formed by adding potash alum to formalised diphtheria toxin is a very effective antigen, apparently because of its slow absorption.—Observations on the Rôle of the Spleen in Antibody Production, by R. W. Scarff (London). The effect of splenectomy depends on the rapidity with which the spleen takes up and dissolves the various antigenic particles.—Extensive Subpial Hæmorrhage Due to Detachment of the Anterior and Middle Cerebral Arteries from the Anterior Perforated Spot, by W. J. Logie and P. M. Baird (Falkirk). Caused by a double punch on the head which did not injure soft tissues or skull.—Elementary Bodies in Various Virus Infections, by J. C. G. Ledingham (London). Minute bodies about 0·25µ in diameter are found in several virus diseases—vaccinia, fowl pox, psittacosis, ectromelia. The "inclusion bodies" consist of agglomerations of these "elementary bodies."—The Lining of Abscess Products in Dermis by Epithelium, by J. C. G. Ledingham (London). Cutaneous abscess cavities acquire a lining of epidermis by extension from the skin.—The Intravitam Staining of Bone with Madder and other Plants, by G. R. Cameron (London). Feeding rats with the roots of lady's bedstraw and other members of the natural order Rubiaceæ stains their bones red as with madder.—A Patent Ductus Arteriosus in an Aged Horse, by T. Hare (London).

British Journal of Children's Diseases.

IN the issue for October–December, 1930 (Vol. XXVII.), Dr. T. F. McNair Scott contributes a paper on Post-Vaccinal Encephalitis in Infancy in which he records a personal case in a male infant of 6 months who recovered without special treatment, as well as 21 cases collected from the literature of post-vaccinal encephalitis in the first year of life, emphasising the extreme rarity of the condition at this age compared with other periods of life. Five clinical forms are described—namely, meningitic, cortical, tetaniform, brain stem, and lower motor neuron types—of which the meningitic is the commonest. Of the 22 cases 12 died, but only one of the survivors showed any sequelæ.—In An Analysis of One Hundred Cases of Failure of Breast Feeding, Dr. H. W. Pooler, medical officer to the Child Welfare Centres of the Derbyshire County Council, comes to the conclusion that return to domestic duties is the principal cause, accounting for 63 per cent. of the failures. Too frequent feeding was only a subsidiary cause, while nipple trouble, the importance of which does not appear to be sufficiently emphasised in antenatal instruction, accounted for nearly one-quarter of the whole number of cases.—In their Study of the Specificity of the Hæmolytic Streptococcus Associated with Scarlet Fever, Dr. T. Toyoda, Dr. J. Moriwaki, Dr. Y. Futagi, and Dr. S. Hoshizaki, of the Japanese Government Isolation Hospital, Dairen, Manchuria, bring forward evidence to prove that neither morphologically, biologically, nor serologically can scarlet fever streptococci be regarded as possessing a specificity differentiating them from other hæmolytic streptococci.—Dr. E. H. R. Harries and Dr. E. C. Benn report two cases of Sublingual Mumps with Œdema of the Tongue in a boy aged 8 and a girl aged 13 respectively. No previous example of this complication appears to have been recorded.—Dr. James Wright publishes a case of Pyonephrosis as a Complication of Typhoid Fever in a boy aged 11. The typhoid bacillus was isolated from the urine and from the pus of the pyonephrosis. Death took place a fortnight after the operation. The patient had had no previous renal trouble, and no renal symptoms had occurred during the course of typhoid fever.—This issue contains a remarkably full index which will form a useful guide to current pædiatric literature.

REPORTS AND ANALYSES

DU MAURIER VIRGINIA FILTER-TIPPED CIGARETTES.

(PETER JACKSON (TOBACCO MANUFACTURER), LTD., 217, PICCADILLY, LONDON, W.1.)

AT one end of these cigarettes there is attached a filter-tip covered with cork. The filter, which is 1·2 cm. long, is composed of three layers of white vegetable tissue resembling crepe paper, with alternate layers of fine cellulose, each of these layers being about 6 cm. long. When rolled together a light compact mass results, which acts as a filter to certain of the undesirable constituents of tobacco smoke without producing any "drag" in the suction. No central cavity remains through which a straight stream of smoke could impinge on the tongue. The filter-tip is partly selective in its action and retains pyridine bases and non-volatile bodies which are generally held to be the principal cause of throat irritation.

Additional advantages of the filter-tip comprise protection of the lips, teeth, and fingers from unsightly stain, and prevention of fragments of tobacco from getting into the mouth. The smoke is cool and sweet, and no tobacco is wasted as in the ordinary cigarette end. The average weight of each cigarette is 1·31 g. (22 to the ounce), of which amount 83·5 per cent. is tobacco.

When analysed the following results were obtained on the tobacco:—

Moisture	13·4	per cent.
Ash	9·77	" "
Oil (petroleum ether extract) ..	3·17	" "

The percentage of oil is well below the customary limit, and the tobacco itself is of a high-grade quality.

We have tested these cigarettes and find them to be cooler and less irritating to the mucous membrane than ordinary cigarettes of good quality without the filter-tips. The Du Maurier cigarettes may be regarded in every way as satisfactory, and they constitute a distinct and hygienic advance in the marketing of cigarettes.

BANTAM COFFEE.

(THE BANTAM PRODUCTS LTD., LEEDS.)

This is a dried coffee extract, and when analysed the following results were obtained:—

Moisture	2·24	per cent.
Ash	13·88	" "
Soluble in petroleum ether ..	0·26	" "

The preparation dissolves completely and with ease in hot water, and the flavour is pleasant and very closely resembles that of coffee prepared in the ordinary way for domestic use.

It will be noted that the amount of matter soluble in petroleum ether (mostly oil) is so small as to be negligible, whereas, in the roasted coffee bean this figure averages about 14 per cent., and the bulk of it would find its way into the cup. It is likely that the absence of oil in this extract renders it more easily digestible than ordinary coffee.

This extract should prove acceptable for a variety of purposes, as it is so easily and quickly prepared by the addition of hot water, and, moreover, is free from any "grounds." It is claimed to be the equivalent of ten times its weight of ordinary roasted coffee.

THE LANCET.

LONDON: SATURDAY, JANUARY 24, 1931.

MYOMECTOMY.

IN 1843 the first abdominal hysterectomy for uterine fibroids was performed by A. M. HEATH, who duly recorded the event in the *London Medical Gazette* of that year. The patient unfortunately died from hæmorrhage 17 hours after the operation. Other attempts to remove the uterus were made by CHARLES CLAY of Manchester in 1844, and by JOHN BELLINGER in 1846, but their efforts were attended by no greater success, and it was not until 1853 that the first recovery after total abdominal hysterectomy was published by WALTER BURNHAM in Nelson's *North American Lancet*. Compared with ovariotomy, first performed by MACDOWELL in 1809, intraperitoneal operations upon the uterus are therefore a comparatively modern development of abdominal surgery. The last 50 years have, however, witnessed steady and sustained progress in the art of surgery, and in the realm of intraperitoneal technique pelvic surgery has worthily occupied a premier and in certain respects a pioneer position. Conservatism and the restoration and maintenance of physiological function is or should be the ultimate goal of surgical treatment. Hysterectomy, however perfectly it may be performed, is in the nature of things a mutilating procedure, resulting in a varying degree in functional disability according to the age of the individual upon whom the operation is performed. It is therefore perhaps a matter for some surprise that gynæcological surgeons, whilst perfecting the art and technique of hysterectomy to the degree of excellence which is possible to-day, have in the past somewhat neglected the conservative operation of myomectomy. From the broad standpoint myomectomy is indeed as old or an older operation than hysterectomy, for the early pioneers of ovariotomy have recorded the removal of large abdominal tumours of uterine origin by clamping and division of the pedicle. The ablation of a pedunculated subperitoneal growth is, however, a very different procedure from the enucleation of one or more fibroid tumours embedded in the wall of the uterus. This was carried out successfuly in 1897–98 by W. ALEXANDER of Liverpool, who removed 25 neoplasms and conserved the uterus. ALEXANDER's successful technique published in the *Medical Press and Circular* and *British Gynæcological Journal* does not appear to have attracted the attention it undoubtedly deserved, and apart from a few isolated records the literature on the subject is remarkably sterile. This was undoubtedly due to the surgical popularity which naturally attended the development of the easy and safe technique of subtotal hysterectomy. Indeed, myomectomy was relegated to the position of an operation of opportunity rather than a method of election. Recent work appears to indicate the need for a careful revision of this attitude of mind. In the light of modern surgical technique can myomectomy offer anything which hysterectomy, total or subtotal, cannot, and if so at no greater risk? Mr. VICTOR BONNEY, in a Hunterian lecture which we publish in our present issue, makes a strong claim for the thesis that myomectomy should now supersede hysterectomy as the operation of choice when uterine fibroids require surgical intervention. His view is based upon the results of 403 myomectomies performed by him from 1910 up to the present day. In 166 cases the tumours were solitary fibroids; in 237 they were multiple. In the latter group some remarkable figures are given relating to the actual number of tumours removed. In one instance as many as 125 fibroids were enucleated from a single uterus and apparently numbers from 15 upwards are by no means uncommon.

The first criterion of the value of any operation must always be the question of mortality. There is no doubt that in the past one of the main reasons which militated against the more general adoption of myomectomy was its higher mortality when compared with subtotal hysterectomy in the same type of case. In the earlier operations this was undoubtedly high, mainly as the result of hæmorrhage and sepsis. In Mr. BONNEY's series the operative death-rate was 1·7 per cent., a figure which compares entirely favourably with the same mortality attached to hysterectomy for fibroids to-day by gynæcological surgeons as a group. Comparing the operative risk of the two operations, it must be remembered that the myomectomy figures are those of an exponent of the highest surgical skill and that probably the majority of the operations were performed in the midst of surroundings replete with every facility which modern science can devise. As the result of the stimulus given to myomectomy by BONNEY's and LEITH MURRAY's lead it is probable, however, that other surgeons will be drawn to the same field. It is to be hoped that they will publish their successes and failures with the same frankness in order that the true value of the operation may be truly assessed. Improvement in the technique of the actual operation has contributed very considerably to the reduction in the initial mortality from hæmorrhage. The control of all bleeding by means of a special myomectomy clamp which embraces the round ligaments and supravaginal cervix is undoubtedly a valuable adjunct. The employment of a single primary incision preferably through the anterior uterine wall with subsidiary secondary incisions in the substance of the organ giving access to the individual tumours is also a technical advance by eliminating the troublesome intraperitoneal oozing so commonly a feature associated with multiple cuts through the uterine tissues. The planning of the incision to avoid scars at the uterine fundus and on the posterior wall prevents the adhesion of small intestine with the risk of intestinal obstruction. It is interesting to note that Mr. BONNEY has no compunction in opening the uterine cavity and incising the posterior uterine wall to enucleate a fibromyoma in this situation in order to avoid the necessity of a separate peritoneal incision. Indeed, exploration of the uterine cavity is advocated in many instances with the object of removing redundant hypertrophic endometrium and if necessary reducing the area of the menstruating surface. The nature of the actual operation, adequate for an individual case, naturally varies with the anatomical location of the tumours present. For large tumours in the posterior uterine wall too large for "transcavity enucleation" Mr. BONNEY has devised an ingenious procedure which he aptly terms the "hood operation." The technique necessarily involves considerable mutilation of the uterus, and it would be interesting to have figures of the after-history of patients upon whom this operation has been performed, as distinct from the main bulk of myomectomy statistics. In the performance of myomectomy involving the enucleation of numerous tumours the observance of a rigid aseptic ritual is second only in importance to the control of hæmorrhage. Much suture material is necessarily buried in the uterine wall and therefore the catgut employed must be irreproachable, in which connexion a tribute is paid to the Chorda catgut of Prof. W. BULLOCH.

After mortality the value of any operation can only be judged by reference to the subsequent health and happiness of the individual and to the function of the organ primarily involved. With regard to myomectomy it has been argued that the enucleation of many fibroids from the uterine wall leaves a scarred and damaged organ which is liable to develop more neoplasms, which is still a source of discomfort to the individual by virtue of painful and excessive menstruation, and which is probably functionless in respect of its primary function of child-bearing. Much interesting information upon these points is contained in Mr. BONNEY's paper, and facts are brought forward which appear to discount previous conclusions, based perhaps upon insufficient material. The most important physiological test of the success of an operation upon the uterus is naturally the ability to conceive and to carry the pregnancy to a successful termination. In a group of 77 married women within the child-bearing age at the time of operation, 30, or 39 per cent., became pregnant subsequently. Twenty-six conceived once, two conceived twice, and two three times. Twenty-five of the deliveries were natural. Two patients aborted and the remainder were delivered by Cæsarean section with the exception of one case where perforation was required for contracted pelvis. It may be said, therefore, that 34 children owe their existence to an operation which was substituted for the more radical procedure of hysterectomy and without presumably incurring a greater risk to the mother. It is true that in the series the necessity for Cæsarean section appears to figure rather prominently, but the remaining deliveries through the birth canal were uncomplicated and the contractile power of the uterus was evidently unimpaired. Furthermore, there was no evidence of weakening of the uterine wall and the scar showed no liability to rupture. It would, however, be interesting to know the extent of the operation which preceded the successful functional result. In how many of these cases were the fibroids multiple and interstitial in position? In how many was it necessary to incise the uterine cavity? What is the proportion of single tumours and how many were subperitoneal, if any? On the questions of the relief of menorrhagia, the development of new fibroids, and the necessity for further surgical interference Mr. BONNEY's figures appear to have disposed of the arguments originally put forward as contra-indications to myomectomy. His results taken as a whole are such as to warrant a revival of interest in an operation which in expert hands affords, as he says, an opportunity for individual ingenuity and craftsmanship compared with which routine hysterectomy is as mere mass production.

SICKNESS AND OCCUPATION.

SCIENCES differ from arts in possessing footrules for measuring the data with which they are concerned. Vital statistics provide the footrules for medicine, particularly for preventive medicine. Their study is the means by which we test our convictions that good health must be earned by daily activity, and that ill-health results from wrong living—if only we can ascertain how to earn health and what constitutes wrong living. Such studies are comparatively modern; and we are still, not inaptly, admitted by our Royal Colleges to practise the art and mystery of medicine. Variations in the environment of life, as represented by occupations, are recognised as providing data, regarding both sickness and death, which throw light on the origins of disease. Here such specific diseases as plumbism, silicosis, or skin cancer result from exposure to definite specific hazards; or general troubles, like bronchitis, rheumatism, or heart disease, by occurring unduly in certain occupations, may disclose the evil influence of some unexpected hazard. The methods pursued for detecting these hazards constitute an intricate study. First, standards of normality, both for mortality and morbidity, must be determined, against which occupational records can be measured. But normality, like truth, is an elusive entity, needing a high-priest to demand its definition, which, however, in this instance, has just been cleverly undertaken[1] by the International Labour Office at Geneva. A study has been issued which mainly displays the intricate difficulties to be mastered. Herein national pride notes that English records, investigations, and methods receive pride of place. Before occupational influences can be estimated, allowances must be made for age, sex, marital condition, race, social status, and density of population; each and all of which are well recognised as modifying the type and extent of both morbidity and mortality. Even then the way is not clear, for strenuous occupations, like mining, which may or may not be associated with some special risk, tend to recruit the strenuous; while occupations requiring little strength, like tailoring, but may be without risk, are pools wherein collect the weaker brethren, naturally prone to ill-health, either ab initio or as the result of exposure to risk at some other occupation. Next, morbidity must be classified according to disease, as far as possible on the lines internationally adopted for mortality; here consideration must be given not merely to the number of cases of sickness, but to the length of each case and to its method of ending, whether by recovery or death. The populations must present further problems, since trade prosperity or depression may rapidly change their size and age constitution; while rises or falls in the level of wages diminish or increase the tendency to claim sick pay. Of a truth many dragons beset the path to knowledge; but dragons are there to be overcome.

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[1] Statistical Methods for Measuring Occupational Morbidity and Mortality. International Labour Office. Studies and Reports, Series N (Statistics), No. 16. 1930. Geneva. 5s.

The influence of occupational life is found to be obscured if standardisation for age is used; hence it is wisely rejected. Rather is study recommended, with instances given, of any excess morbidity or mortality over the standard—whatever standard, national or international, has been adopted—distributed according to age. Certain types of excess then become manifest which can be grouped. The first group contains industries having no selectional recruitment, subdivided as risk is slight or considerable. With slight risk, the curve of excess morbidity or mortality rises fairly steadily with age. With considerable risk, it rises with age until selection, by death or transfer to other work, stops the rise in the curve, which eventually becomes level or begins to fall. The second group contains strenuous industries which recruit vigorous lives, again subdivided as risk is moderate or severe. With moderate risk, the weakest are eliminated fairly rapidly, causing a rise in the curve in early life; then it steadies or even falls, until the more resistant elements are attacked, when it rises again, though it is likely to drop finally as age advances. With severe risk, selection by death or transfer is pronounced; hence, after a rapid rise, the curve falls steeply, but it always keeps at a high level. The third group contains industries which naturally recruit poor lives, subdivided similarly. Here, with slight risk, the curve starts high and thereafter falls gradually, but continuously, unless a constant inflow of weak persons so coincides with the risk as to keep the curve stationary. With considerable risk, the curve starts higher and then drops almost completely in a gradual slope, as more resistant elements remain to be attacked, while the main effect has been exhausted by the first attack. Thus, the feature common to group 1 is a long and gradual rise, to group 2 a long and steep rise, and to group 3 a long and gradual fall. On the whole, a convex life curve of excess mortality or morbidity is strong evidence that the excess is occupational in origin—an important dictum.

When the reason for an excess is examined according to disease, each disease is found with a typical excess curve, which, however, for each occupation is modified by selective forces; thus the excess curve for chronic nephritis shows two peaks of which the first is the higher; but the excess curve for pulmonary tuberculosis, after a steep rise, has one big peak. This study is a fascinating one in that it introduces new methods for detecting influences in life associated with varying types of invalidity and mortality. It is one for which Geneva deserves our thanks. Not the least valuable part is the way in which records from several countries, using national standards for comparison are assembled, contrasted, and made to yield their contributions to knowledge.

THE COURSE OF UNTREATED MALARIA.

The therapeutic use of malaria in general paralysis of the insane and other diseases has incidentally thrown new light on malaria itself, and at a meeting of the Royal Society of Tropical Medicine and Hygiene on Jan. 15th, Colonel S. P. James recounted some of the information thus gained since 1926. His paper chiefly concerned work done at the Horton Mental Hospital where malariotherapy has been employed in encephalitis lethargica and skin diseases, as well as in G.P.I., while there have also been accidental infections in the laboratory. The cases he reported were nearly all of tertian malaria induced by bites of *Anopheles maculipennis*, and the clinical picture was essentially the same whether malaria was added to another illness or not. In the tropics hookworm, syphilis, or some other infection is nearly always added to malaria, so that any suggestion that, because of such complication, the English work does not represent the normal course of a malarial infection can hardly be accepted.

Much has been learnt by letting therapeutic malaria "smoulder," by giving no quinine or only enough to stop fever without exterminating the parasites—a change in procedure based on the belief that the curative process is due not merely to the high fever but also to the continued presence of the parasites and their toxins. In half the smouldering cases spontaneous radical cure of the malaria has seemed to follow. In the rest James has described three febrile phases after the primary fever has ceased, and has proposed for them arbitrary labels which it will be convenient to use here. In the first eight weeks febrile attacks are frequent (recrudescences), in the next 16 weeks less so (relapses), and after that again frequent, especially between the thirtieth and fortieth weeks, occurring even as late as the forty-sixth week (recurrences). During the attacks parasites reappear in the cutaneous blood, or increase therein if already present. James regards the recurrence as very important from three aspects. There were 11 cases in which malarial infection seemed to have failed, and further attempts to produce it were not made because there was not the usual urgent need of treatment. In all these patients fever with parasites first appeared 28 to 44 weeks after they were bitten.

In JAMES's sense these were recurrences; recrudescences and relapses had been suppressed and replaced by a long latent period. They afford strong, perhaps convincing, evidence in favour of the view that the spring rise of malarial incidence in northern Europe, and the occurrence there of primary spring cases, at a time when the new anopheline brood is at least scanty, are due to recurrences of infections acquired in the previous autumn at a time when anopheles are abundant and their infection-rate at its height. We might thus describe the primary spring cases as "primary recurrences." Secondly, the recurrence is significant in immunity. At any time before recurrence had taken place, bites of infective anopheles could produce a malarial attack; after recurrence and subsequent spontaneous recovery they could not. But this immunity was singularly restricted; it was not even species wide; it was restricted to the particular strain of the tertian malaria parasite which caused the original attack. This interesting observation confirms, it may be noted, the views reached by the Malaria Commission of the League of Nations after its tour through southern and eastern Europe in 1924, that the exchange of malarial strains produced by mass migration of populations was a cause of epidemicity which has not been sufficiently stressed. Thirdly, the influence of recurrence, through its production of natural immunity, is held to be of primary importance in treatment. In all but exceptional cases JAMES considers the effect of quinine to depend on the acquisition of natural immunity, and this in its turn on what has happened in the primary attack. One who has suffered 10, 12, or more severe paroxysms has gone far to establish that immunity to his own parasitic strain which will show itself in spontaneous cure; in such conditions the good effect of quinine is marked. When, however, the drug has been given early it has interfered with these necessary mechanisms, and illness is apt to be protracted and marked by repeated febrile attacks. It is not believed possible "by any plan of quinine treatment to prevent recurrence *in the cases in which what has happened during*, or shortly after, the primary infection with sporozoits has made it an inevitable event in the illness." While subtertian malaria must be vigorously treated with quinine as soon as recognised, JAMES thinks that during the primary fever of tertian or quartan malaria the patient's interest lies in the withholding of quinine as long as possible. This implies the closest supervision to anticipate the possible advent of a grave bodily state and to prevent the possible spread of infection.

Colonel JAMES fully realises that a view so contrary to present usage is unlikely to meet with ready acceptance. Moreover, this country, as he pointed out, is not the place where final answers can be given to the questions he has raised; nor can these be reached by the mass methods of study at present employed—methods which use such average results as spleen and parasitic indices. The necessary study must be individual and intensive, and carried out in endemic areas where immunity or tolerance are clearly attained by those who survive in them. In the discussion which followed his paper the difficulties entailed in the suggestion were at once obviously and indirectly voiced, but it is not easy to see an alternative. His skilful work on malaria, deliberately produced and closely studied in controlled conditions, shows once again that important work on tropical diseases can be done in temperate climates. The Royal Society of Tropical Medicine may well congratulate itself on the valuable communications it has received on this particular subject, from WARRINGTON YORKE and J. W. S. MACFIE in 1923, from YORKE again in 1925, and from Colonel JAMES in 1926 and 1931.

ANNOTATIONS

THE FOSSIL MAN OF PEKIN.

THE discovery in 1929 of a brain-case in the limestone cave at Chou Kou Tien was the crowning chapter in a story which has been narrated in full in THE LANCET by Sir Arthur Keith.[1] But the tale deserves summary for its romantic quality. It begins with the stock-in-trade of a Chinese apothecary from whom in 1903 Prof. Max Schlosser received a fossil tooth that had been rescued from its destiny as one of the ingredients in some quack nostrum. This first suggested China as the home of ancient man. A geological survey was set up by the Chinese Government, and in 1918 the lack of students led Dr. Wong to invite Dr. J. G. Andersson, of Upsala, to join the expedition. One day Dr. Andersson overheard by chance the conversation of two of his native assistants who were remarking that he was foolish to waste his time on that spot when there was a much richer deposit of bones further north. He travelled north and found a quartz pebble. But quartz was not indigenous to that region, and he drew the conclusion that man had brought it there, and he dug for five years more. The immense collection of fossil bo that resulted was examined by Dr. O. Zdansky Prof. Wiman's laboratory at Upsala, and yiel two more teeth. The geological survey was t strengthened by the government, by the Pe Medical College under Prof. Davidson Black, a by the Rockefeller Foundation, and in 1927 unworn molar of a child of seven was found Dr. B. Böhlin. For the expert this was enough, it blended human and simian characters in a way hitherto known to us, and a new genus *Sinanthro* was created to hold men-apes of this class. A y later parts of two jaws and of a brain-case came light and confirmed the deductions made from t teeth. The Rockefeller grant was extended fo further three years, and finally in December, 19 the exhibit known as the "Pekin skull" was excavat

The majority of English people will never have t opportunity of seeing this specimen, for it is t property of the Chinese Government and will rema in China. All must feel, however, that the libe support afforded by this Government to the exp investigations which have led to the discovery a a model which might be copied with advantage many governments of countries in a less unsettled state. Certain criticisms depreciating the value of the find have emanated from Germany and from America, but last week a large number of people were able to hear from Prof. G. Elliot Smith, at University College, London, an authoritative valuation of *Sinanthropus pekinensis* which at once disposes of these less well-informed statements. Although for full details we must await the official publications, Prof. Elliot Smith, who has spent some time in China examining the specimens and locality, was able to show photographs of some aspects of the material and to give details of great general importance. The skull, which when seen from above has a decided resemblance to Pithecanthropus, can be placed definitely between this and the Piltdown specimen and, as Prof. Elliot Smith pointed out, bridges the gap between these and increases their evidential value in reconstructing the evolutionary history of *Homo sapiens*. The Pekin man died where he had lived, and lay where he died—from our point of view, fortunately—so that the natural deposits give the geological age with unusual certainty, and this can be placed early in the Pleistocene. Doubtless the establishment of this fact will have its effect on opinions held about the ages of the two other famous skulls.

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[1] THE LANCET, 1929, ii., 683.

The front part of the skull resembles Pithecanthropus and the back Piltdown man; the owner was therefore nearer to the common ancestor than either of these. He was probably a youth of about 18. The eyebrow ridges are strongly marked and the frontal bones are flattened, but less so than those of Pithecanthropus; there is no mastoid process, but the articulation of the jaw is similar to that of modern man. As in Piltdown man, the parietal is thick, but the tables are separated by a distinct diploe and there is definite hollowing over the speech areas, suggesting a development of the parietal lobe of the brain which is absent in Pithecanthropus. The brain cavity is not on the whole much smaller than that found among living men, and it shows asymmetry such as is associated with right-handedness. A very curious and interesting point is that no trace whatever was found of instruments—except unworked quartz—despite careful search. An official report is in preparation.

CEREBRO-SPINAL FEVER IN GLASGOW.

Dr. R. J. Peters and Dr. W. C. Gunn, of the Glasgow public health department, have given an interesting account[1] of an epidemic of cerebro-spinal fever in that city during the first half of 1929. This is the third time the disease has visited Glasgow during the present century. The first and most severe was in 1906–08, when 1363 cases were reported and the fatality-rate of 910 patients treated in hospital was 74·8 per cent. The second, in 1915 and 1916, was a local manifestation of what was happening in most of the populous parts of Britain and was associated with outbreaks in military centres, in which the spread was attributable to overcrowding, poor ventilation, fatigue, and exposure. After 1916 the disease remained sporadic in Glasgow until the early months of 1929 when a series of cases, mostly acute, and some fulminating, occurred among boys aged from 14 to 18, who were in the habit of attending an ill-ventilated and crowded recreation hall. The total number of cases between January and June was 134, and the fatality-rate was 83·5 per cent. This being about 10 per cent. higher than in 1906–08, suggests that nothing was gained by the intervening improvement of methods of preparing and administering the specific serum. The incidence in males (86 cases) was almost double that in females (48 cases), but the disease was equally fatal to the two sexes. A table is given showing that cerebro-spinal fever is essentially a disease of small, overcrowded, and badly ventilated houses, its incidence being highest in houses of one or two rooms, and rapidly diminishing as the living space gets bigger. The Glasgow epidemic of 1929, like those during the late war, showed that segregation was of little use in the absence of measures to secure good ventilation and prevent overcrowding. As was to be expected, the better-class residential districts were completely exempt from the disease. Of the 22 patients who recovered 18 showed no sequelæ, while of the others, 1 was blind, 1 was deaf, and 2 suffered from headache and nervousness and were slightly unstable in temperament. In view of the attention which has been paid to the possible association of influenza with cerebro-spinal fever and acute poliomyelitis, it is noteworthy that a particularly severe type of influenza visited Glasgow in January and February, 1929, and that there was a small but definite epidemic of poliomyelitis in the city during July to October. But the incidence of influenza was not above the average in families where cerebro-spinal fever developed.

THE MENTALLY DEFECTIVE BLIND.

CHILDREN who are afflicted with either a physical or a mental defect can usually find suitable accommodation in this country to-day, but the unfortunate child or adult suffering from a double or a multiple defect often falls between two stools. A small but pathetic group among these are the children who are both blind and mentally subnormal. Their case has recently been pleaded before the Northern Counties Association for the Blind by Dr. Henry Herd.[1] In a sense, he remarks, every blind person may be said to suffer from mental defect, as his brain is deprived of the impressions received through the eyes, but when the mental make-up is normal nature compensates for the lack. If, however, the intelligence is dull, blindness will inevitably make the deficiency appear greater than it really is. The problem of helping these people, like the problem of mental deficiency, must be considered under two heads: the educable blind defective and the ineducable blind defective. The two classes are not sharply defined from each other, and the borderline cases are even more difficult to recognise than among the physically normal defectives. Nevertheless, there is a broad distinction upon which depend educational, legal, and administrative points.

The Northern Counties Association knows of 468 blind defectives in its area, of whom 42 are under 16 years of age, but Dr. Herd feels certain that this figure is much below the real number on account of the extreme difficulty of certifying a blind child as defective. He investigates the figures of blind schools and finds, as he expected, that a great many blind defective children are certified as blind only. There is, therefore, reason to think that the problem is a larger one than is generally realised. Dr. Herd recommends first of all a careful survey of the duller children in blind schools with a view to selecting the children who are not really profiting by the education given there. The League of Nations'

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[1] Jour. Hyg., 1930, xxx., 420.

[1] Copies of the report are obtainable from the Secretary, N.C.A.B., 274, Deansgate, Manchester.

Report for 1929 on the Welfare of the Blind recommends that the educable should be left in blind schools and the ineducable dealt with under an organisation for the mentally defective. This, Dr. Herd thinks, is the best method; all mental defect, whether *complicated or uncomplicated*, should be under the care of the Board of Control. To leave blind certified defectives in the charge of an organisation for the blind is only justifiable if that organisation can give them something really distinctive. Work on this problem is being undertaken at the Ellen Terry Home at Reigate and the children there are under the care of the Board of Control. It is unfortunate, as Dr. Herd points out, that this home is receiving a very high proportion of low grade, almost ineducable children, while those on whom it might hope to produce results are still in homes for the blind normal child.

The ineducable case can be trained in simple acquisitions such as muscular balance, walking, speaking, and cleanliness, and will require a large proportion of staff to inmates and infinite patience and individual attention. Training should essentially *begin very early. Left to the well-meaning* but ill-directed training of a mother, such capacities as these children have are never elicited. The Ellen Terry Home takes some at the age of 2, and Dr. Herd suggests that classification should be reasonably satisfactory at the age of 7 at most. It is to be hoped that his suggestions will receive the attention they deserve.

MEDICAL EDUCATION IN THE SUDAN.

THE Gordon College, which acts as a central institution for education in the Sudan, appears to be well adapted to the country and to the type of work required of it. In the annual report of its activities up to Dec. 31st, 1929, attention is drawn to one of the more pressing problems, that of teaching the scholars English sufficiently fluent for them to master other subjects. This difficulty is experienced by all those who teach or lecture in the East; the remarkable proficiency with which their students can memorise long passages from text-books makes it hard to estimate their real comprehension of the matter they quote. A special effort is being made at the Gordon College to improve the English of students undertaking courses in engineering, accountancy, science, and other subjects in which a large technical vocabulary makes fluency essential. In the scientific section the lecturer in chemistry and physics remarks particularly on the language handicap of scholars in their third year; those in their fourth year are able to do more satisfactory work.

In 1929 ten boys completing the science course passed on to the Kitchener School of Medicine, and one was appointed laboratory assistant at the Wellcome Tropical Research laboratories. There can be little doubt that a central organisation under *an English staff, such as the Gordon College*, offers a foundation for the development of a high standard of medical service in the Sudan. Love of accuracy seems to be the attribute of the trained European mind which is least readily acquired by the Oriental, and which is first lost when supervision is relaxed. It is for this reason, perhaps, that those who have worked in the East hesitate to relinquish their jurisdiction to their native successors. Western medicine in lower Egypt, for example, is hardly likely to maintain quite the same standard since much of the direction passed into Egyptian hands as it did under entirely English guidance. A single instance will illustrate the difference in attitude: repeated specimens of fæces from dysentery cases sent by a practitioner to the public health department at Cairo for investigation were returned with negative reports by the Egyptian laboratory workers, until a personal application to the English director of the section led to investigation; 80 per cent. of the specimens subsequently sent and examined showed dysentery organisms. Whether the knowledge of his superior accuracy justifies one person in the perpetual supervision of another is open to discussion. It may well be that exactness can only be acquired by experience of the failure of slipshod methods; if such is the case, supervision can never be constructive, and is as misguided as the zeal with which a nurse buttons a child's boots to save time.

The importance of reliable early training, however, no one is likely to question, and appreciation of the work of the Gordon College is shown by the steady increase of scholars from 86 in 1918 to 554 in 1930. The need of more accommodation for scholastic work has led Dr. H. S. Wellcome to offer new buildings for the Wellcome Tropical Research laboratories, *at present occupying a wing of the College.* The work of the laboratories during the past 30 years has established a great record; striking results have been achieved in reducing the incidence of malaria and bilharzia in the irrigated area of the Gezira cotton scheme. The malarial splenic rate was reduced from 70 to 35 per cent. during the first six months of 1930, and the incidence of bilharzia from 5 to 0·2 per cent. Vaccines were prepared on a large scale, including typhoid, paratyphoid, antirabic, gonococcal, cholera, plague, *Staphylococcus aureus*, and *Staphylococcus albus*. The effect of d'Herelle's bacteriophage in bacillary dysentery was investigated on a large number of cases, and the conclusion was reached that it exerted no influence on the course of an attack.

THE ÆTIOLOGY OF PEPTIC ULCER.

PEPTIC ulcer becomes more and more prominent in medical literature with each succeeding year. Before the war we had the rise of surgical treatment; since then we have seen a partial return to more conservative methods. And along the lines of advance and retreat a battle has been fought which has left relatively little time for considering the original cause of the trouble. The comparative scantiness of ætiological work will make many of our readers turn with interest to a paper on p. 177, in which Mr. Laurence O'Shaughnessy records experiments on the production of peptic ulcer in animals. It is well known that whereas acute ulcers can be produced with considerable ease by a great variety of methods, it is very much more difficult to create a chronic ulcer of the stomach or duodenum in any animal. The methods by which this has usually been done have been chiefly those of Charles Bolton, who used gastrotoxic serum together with devices for preventing healing, and those of F. C. Mann and C. S. Williamson, who used complicated operations. P. T. McIlroy managed to produce acute ulceration in cats by subcutaneous injections of histamine, and his work wa confirmed by Büchner and others. O'Shaughness has extended these observations, and found tha chronic ulcers were not successfully produced b subcutaneous injection of histamine, but appeare in several animals in which local injection into th stomach wall followed by subcutaneous injectio twice daily. These ulcers closely resembled tho described by Bolton. Commenting on his resul

O'Shaughnessy refers to the natural origin of histamine as a product of protein disintegration, and links this to the development of ulcer in man following traumatic lesions such as burns, or the passage of dead bacterial products from septic foci into the blood stream. His work clearly requires repetition in a larger series, and certain other factors will require careful control. It has, for instance, long been known that histamine is a more powerful excitant of the secretion of hydrochloric acid than any other known product; the subcutaneous injection of a minute quantity of pure ergamine acid phosphate in man produces an immediate and striking flushing of the face, and an outpouring of highly acid juice into the stomach which is one of the most striking phenomena of experimental human physiology. It may well prove to be this factor which is of the greatest importance in the present experiments. The injection of any substance directly into the gastric wall must necessarily cause local injury, and if such an injury is followed by the repeated violent stimulation of the gastric secretion, it is perhaps inevitable that a chronic ulcer will follow in an appreciable proportion of cases. These considerations make it necessary to accept O'Shaughnessy's conclusions with the same reserve with which they are put forward.

MONOCULAR VISION AND MOTOR-DRIVING.

A TIMELY investigation of monocular vision is reported by the Belgian ophthalmologists, L. Weekers and R. Hubin.[1] For many purposes of ordinary life the absence of binocular vision is scarcely noticed, or may be in great measure compensated by means of monocular parallax, accommodation, and linear perspective. But this compensation is by no means perfect, and it is often noticed that the one-eyed have difficulties in such actions as pouring water from a jug into a tumbler, or that they require more time and expend more effort in performing tasks which require fine adjustment. The avoidance of a collision by the driver of an automobile is just such a task, and the element of time in making the decision as to what to do when a collision is imminent may be all important. A simple test which will prove beyond any question just how perfect or how defective the capacity for correctly estimating distance is in any individual is highly desirable. Such a test is employed by the Belgian military aviation authorities. Three black threads are placed vertically, the centre one being fixed while the two lateral ones can be moved into the same plane with it by means of a string held by the subject to be tested, who is seated at a certain distance away. A series of experiments was carried out: (1) on emmetropes; (2) on corrected myopes; (3) on corrected hypermetropes; (4) on subjects who had recently lost the sight of one eye; (5) on subjects who had for many years been one-eyed; and (6) on those with amblyopia ex anopsia of one eye. In the first three classes tests were made first with both eyes open and then with one eye closed. By means of the apparatus it was possible not only to test the presence or absence of any defect of binocular vision but also the amount of the defect when present. The conclusions arrived at were as follows: First, that stereoscopic vision is defective in the one-eyed (as might be expected), even when the loss of one eye is not recent. Secondly, that apart from high hypermetropia the existence of ametropia, if fully corrected and with good visual acuity, has no practical bearing on the degree of stereoscopic acuity. It was noticed that in the case of the one-eyed, the amount of the defect of binocular vision was very variable if the experiments were repeated, whereas in the case of the normal subject with binocular vision the results were fairly constant. Only very exceptionally was a one-eyed subject able to give satisfactory answers, and this was so even when the strict conditions under which the tests were carried out were relaxed and the subject was permitted to move his head.

OPERATIVE TREATMENT OF AURAL VERTIGO.

IN 1904 Richard Lake first operated on the labyrinth for the relief of vertigo. Since then the various operations tried have varied from the mere opening of the external semicircular canal, with a view to relieving endolabyrinthine pressure, to exenteration by combined superior and inferior labyrinthotomy. The smaller operations often fail to achieve their object, while the more extensive ones are formidable and even dangerous. Mr. Sydney Scott, in experiments on pigeons, destroyed the function of the semicircular canals by the injection into them of alcohol, and this has induced Mr. W. M. Mollison[1] to try a similar method in the treatment of severe vertigo of aural origin. He finds the operation a very simple one, for the healthy mastoid bone is almost bloodless; the prominence of the external semicircular canal is exposed and opened, and 0·5 to 1·0 c.cm. of absolute alcohol is injected in a forward direction with a lacrymal syringe. Mr. Mollison has performed this operation on eight patients, six of whom suffered from non-suppurative aural vertigo, and two from vertigo following the radical mastoid operation. One patient, though improved, has never been entirely free from symptoms; all the others have been free from attacks of giddiness, one for as long as ten years. In some cases there is considerable vertigo for a few days after the operation.

AN EVANGELIST OF PASTEURISATION.

Nathan Straus, who has just died in New York, was one of three brothers who shared an absorbing interest in Zionism with a genius for commerce which, we are told, made it impossible for them not to make money. But Nathan, the younger brother, had a second interest which was a craving for truth, undiminished by commercial success, and when he made money he spent it on the children of others. Some 40 years ago he became convinced that raw milk was killing children in New York and that the risk of drinking milk could be reduced to a minimum by the process of pasteurisation. He accordingly gave his mind to organising a practical system of pasteurisation in New York, and the first laboratory to this end was established in 1893 with a simple equipment for furnishing modified and pasteurised milk in bottles from which it was to be given direct to the infant. In 15 years there were 17 Straus milk depôts in New York City from which more than 3 million bottles of milk were sent out annually, and Nathan Straus attributed with some justice the decline of New York's infantile death-rate from 96·2 per 1000 in 1892 to 59 per 1000 in 1906 to the employment of pasteurisation. Later he designed a pasteuriser for home use, known by his name, which was regarded as both efficient and foolproof. Not content with this achievement in New York, Mr. Straus discovered a village of 4000 inhabitants near Heidelberg with a death-rate among children under two of 460 per 1000; there he set up a plant supplying all children of this age with free pasteurised milk when, it is stated, the death-rate promptly fell to less than 200 per 1000. He also gave a pasteurising plant to the city of Dublin which has since been maintained by the Women's National Health Association. Little by little his work gained public recognition and by 1916 pasteurisation was either obligatory or officially encouraged in 46 of the 52 largest cities in America. Nathan Straus would have been greatly cheered had he been able to appreciate the significance of the manifesto by Lord Dawson and others which appeared in our columns on Dec. 13th last, for his gospel was the universal recognition for pasteurisation as the immediate practical method of ensuring the safety of the milk-supply. It never occurred to him that this measure was a second best or that it could hinder the provision of an ideal supply of cleanly produced milk.

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[1] Scalpel, Dec. 6th, 1930.

[1] Guy's Hosp. Rep., 1930, lxxx., 470.

DISTRIBUTION OF VIRUS AFTER VACCINATION.

A SERIES of detailed observations on the course of primary vaccination of 86 infants of 4 to 20 months of age is recorded from Germany.[1] In the great majority of the infants, the vaccination ran a normal course, and the virus was detected in the blood on the sixth day in 75 per cent., but never beyond the tenth day, nor was it ever found in the cerebro-spinal fluid in 56 examinations, nor in the throat swabs from 61 infants taken between the third and fifth days. Six infants had symptoms of nervous disturbance which the authors do not more exactly define and in five of these evidence of unusual distribution of the virus was obtained; twice it was recovered from the cerebro-spinal fluid (on the sixth and twelfth days) three times unusually late in the blood (on the fifteenth, seventeenth, and twenty-ninth days), and twice from the throat. From these observations they draw the conclusion that post-vaccinal encephalitis is very likely associated with unusually extensive distribution of the virus in the body. They think that this conclusion supports the recommendation of Hekman and Paschen that antivaccinia serum, either from vaccinated human beings or specially immunised horses, should be used intravenously or intramuscularly in post-vaccinal encephalitis cases. Whatever the explanation of the value of such serum may be, the procedure appears to be supported by the published results.[2] Ledingham and Petrie have prepared antivaccinia serum from horses for this purpose.

AN ANCIENT AND HONOURABLE CALLING.

THIS year is the Jubilee of the Midwives Institute, and its Council is appealing for a fund as a tribute to those who in 1881 determined to obtain recognition, training, and an improved status for midwives—then an almost untrained body of women, entirely unorganised. In the early 'nineties the Institute raised a guarantee fund of £1000 to promote the first Midwives Bill (1890), and initiated the long struggle to obtain State recognition which culminated in the Midwives Act, 1902. It is due to these efforts that the trained independent midwife and the district nurse midwife exist to-day. The Institute is managed by midwives for midwives, and is a self-governing body of professional women whose object is to watch over the interests of the practising midwife, to promote her efficiency, and improve the status of the profession in every way. In view of the findings of the Departmental Committee on the Training and Employment of Midwives, it is essential that the midwife should be competent to take her part in reducing maternal mortality and morbidity and infant mortality. She is an essential unit in any scheme for a national maternity service, and it is in order to provide the mothers of this country with the best possible care that the Institute is promoting the further education of midwives. The standard of training has already been raised through post-graduate courses of instruction and the initiation by the Institute of a diploma in teaching. *One of the most urgent and vital needs* is to further and develop these educational activities. Funds are needed for further development of this educational work and for adequate premises to permit of its extension. The money collected through the appeal will be presented in June next to Miss Rosalind Paget, the last surviving founder of the Institute, who has acted as its hon. treasurer for 40 years. The address of the Institute is 12, Buckingham-street, London, W.C.2.

THE DOSAGE OF DIGITALIS.

"LET the medicine be given until it either acts upon the kidneys, the stomach, the pulse, or the bowels; let it be stopped on the first appearance of any of these effects." This advice, given by William Withering, who wrote the first detailed study of digitalis 150 years ago, is quoted by H. Gold and A. C. DeGraff [1] in a recent paper on digitalis. They lay stress on its importance and point out that obedience to this ancient precept ensures that the patient is fully digitalised, whereas some methods used by modern physicians result in insufficient or excessive digitalisation. They then discuss the vexed question of the dosage necessary to produce the optimum therapeutic effects in patients with auricular fibrillation and cardiac failure. The degree of cardiac failure is the factor of greatest importance in estimating the dose required, and for practical purposes they arbitrarily divide their patients into two groups: those showing signs of failure when at rest, and those who only develop signs of failure after a certain amount of exertion. In the first group, rapid digitalisation with the largest doses that can be tolerated without toxic symptoms gives the best results; but in the second group such high dosage is usually unnecessary because there is a wide margin between the amount of drug required to produce full therapeutic effects and the amount that can be tolerated without toxic symptoms. In this second group, once the initial effect has been obtained, a relatively small dose can be continued for daily maintenance with the maximum therapeutic effect. The usual explanation of this is that the smaller doses are necessary in order to maintain the high "effective concentration" of the drug in the body produced by the larger. Gold and DeGraff, however, set forth evidence to show that the "effective concentration" necessary to maintain full therapeutic action is usually much lower than that required at the beginning of treatment. They also point out that there is another effect to be considered after the circulation has been restored—namely, the tendency for improvement to be maintained, irrespective of digitalis treatment. This varies with the different kinds and degrees of cardiac damage, and in their opinion plays a significant part in determining the dosage required in the later stage of treatment. The wide variation in dosage recommended by different authors is probably due to the fact that the same preparation may vary much in potency. Such variation may sometimes escape detection in the wide margin between the minimum dosage which produces the full effect, and the maximum tolerated without toxic symptoms.

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[1] Deut. med. Woch., Dec. 26th, 1930, p. 2208.

[2] See THE LANCET, 1930, ii., 307; Jan. 10th, p. 85.

[1] Jour. Amer. Med. Assoc., 1930, xcv., 1237.

VITAL STATISTICS FOR 1930.

The Registrar-General has issued a provisional statement of the figures for birth-rate, death-rate, and infant mortality during the year 1930.

—	Birth-rate.	Death-rate.	Infant mortality-rate.
England and Wales ..	16·3	11·5	60
107 county boroughs and great towns including London	16·7	11·5	64
159 smaller towns ..	16·2	10·5	55
London	15·7	11·4	59

The smaller towns are those with a population in 1921 of 20,000–50,000. The death-rate for England and Wales (which is based on the estimated population in 1930) relates to the whole population, but that for London and the two groups of towns (based on the 1929 estimate) to the civil population only. Birth-rate (live births) and death-rate (crude) are per 1000 population, infant mortality-rate per 1000 live births.

The Registrar-General remarks that the birth-rate is the same as that for 1929, which was the lowest recorded. The death-rate is 1·9 below that for 1929 and is the lowest on record, being 0·1 below the rate for 1923 and 1926, the previous lowest. The infant mortality-rate is also the lowest on record, being 5 per 1000 below that for 1928, the previous lowest, and 14 per 1000 below that for 1929. These provisional figures, which are not likely to require substantial modification, have been issued for the information of medical officers of health and others.

SELECTED READINGS.

Two recent historical books[1] should be read by every medical man who wishes to know how physiology reached its present state and in what manner pathology is indebted to physiology throughout the ages. The books run on parallel lines and are complementary the one to the other. Dr. Fulton, a Rhodes scholar and formerly a Fellow of Magdalen College, Oxford, is peculiarly happy in the selections he has made, and shows evidence of considerable research. He draws attention to the work of several physiologists which was in danger of being forgotten or was never adequately recognised. Examples are, Alexander Philip Wilson-Philip, who practised in London about 1830 and was the original of Dr. Firmin in Thackeray's "Adventures of Philip"; Charles Marie Benjamin Rouget of Montpellier, whose researches on the contractility of the capillaries appeared in 1878; and Alexander Stuart, the first Croonian lecturer at the Royal College of Physicians in London. The method followed is similar in each volume. General principles are dealt with first and, in the case of physiology, the circulation of the blood; the capillary circulation, respiration, digestion, and the central nervous system are considered. The survey begins with Aristotle B.C. 350 and ends with Banting, Best, and Macleod, who drew attention to the internal secretion of the pancreas in 1922. Prof. Long considers the history of pathology from Hippocrates to Virchow and shows incidentally how numerous and important were the advances made by English-speaking physicians. The chosen passages give the ipsissima verba of the writers translated, when necessary, into idiomatic English and to each is added a short biography, a portrait, a copy of the title page of the book quoted or a facsimile of the passages containing the Master's summary of his work. The method is ingenious, interesting, and arresting, for it brings the reader into direct contact with authors whose works are often quoted but rarely read. The publisher supplies a final page which takes the place of the sixteenth century colophon setting out various facts of great interest to the bibliographer. It shows that much thought has been given to the paper, type, illustrations, and binding, with the result that each book is light in weight, easy to handle, and pleasant to read. Dr. Fulton's index is so good that, as was said of Dr. Thomas Willis's "Practice of Physic" (1670), the book is "fitted to the meanest capacity by an index."

INDEX TO "THE LANCET," VOL. II., 1930.

The Index and Title-page to Vol. II., 1930, which was completed with the issue of Dec. 27th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of The Lancet, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. W. A. Hopkins to be Surg. Lt.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lt. W. D. M. Millar is promoted to Proby. Surg. Lt.

G. H. Sellers is entered as Proby. Surg. Lt., and attached to Mersey Divn., List 2.

ROYAL ARMY MEDICAL CORPS.

Maj. (temp. Lt.-Col.) C. H. Denyer to be Lt.-Col., vice Lt.-Col. S. L. Pallant to ret. pay.

Maj. and Bt. Lt.-Col. H. M. J. Perry to be temp. Lt.-Col.

Maj. P. G. M. Elvery is placed on the half-pay list on account of ill-health.

Maj. J. A. Bennett retires on ret. pay.

Lts. T. N. Fogarty and J. C. Macfarlane resign their commns.

TERRITORIAL ARMY.

Capt. E. A. Wilson resigns his commn.

Lts. W. H. Gratrix, R. E. Davie, R. G. Morrison, and K. V. Bailey to be Capts.

Lt. W. A. Lister (late K.R.R.C.) to be Lt.

The King has appointed Capt. Walter Hugh Critien, I.M.S., to be His Majesty's Vice-Consul at Seistan.

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[1] Selected Readings in the History of Physiology. Edited by John F. Fulton, M.D., Sterling Professor of Physiology, Yale University School of Medicine. Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox. 1930. Pp. 317. 22s. 6d. Selected Readings in Pathology from Hippocrates to Virchow. Edited by Esmond R. Long, Professor of Pathology, University of Chicago. Same publisher. 1929. Pp. 302. 18s.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

IV.—MIND: ITS EVOLUTION.

THE OVER-IMPORTANCE OF "THIS" AND "NOW."

PERHAPS the greatest cause of our lack of proportion both in viewing our own lives and in our regard of history in general, is the fact that the *now* in which we live is so vivid that we are unable to see it in perspective with past events. If we have been away for a summer holiday living under unusual circumstances and sharing the life of a new environment, it is very difficult, after we have returned to the usual routine of everyday life, to imagine that the life which we have left is still continuing undisturbed in spite of our absence. We feel as if the place where we are not must be less vivid than the place in which we are. This is also comparable to the way in which we usually try to understand others as if they were like ourselves. Our awareness of life, at any given moment, is limited to *me, now.* It is obvious, however, that there is really no objective difference in the vividness of experience as between what *I* experience *here, now*, and what *he* experienced *there, then.* The difference is merely a subjective one of *my awareness*, but to me the difference is so great that I am very apt to ignore the equal importance of *him, there, then.*

If we realised the fact that two events taking place at intervals of time and space were relatively equally important in all but our awareness of them, we should be able to preserve a sense of proportion, and perhaps also a sense of humour, which should save us from an exaggerated sense of personal self-importance. But *me* and *now* together share the importance of coexistence and vividness, and so we are liable to forget the extent to which *me, now* is only a development of *me, then. Now* is the growing point of our individual development, as it is also the growing point of history. But we are inclined to value it in a two-dimensional way, ignoring the time factor. We do not comprehend the way in which *I* and *now* are only built up as the sum of past experiences. But it is in fact true, that the value of *me, now* is largely determined by the value which has been attached to past experience.

For example, suppose that *I* am afraid of this dog *now*, it may be that this dog is a particularly fierce dog and that I am actually in danger of him biting me, but my awareness of my danger depends upon my previous value of danger and my previous value of dogs, and also, it should be added, my value of myself. But past experiences tend to be forgotten in our valuation of the present situation, however important they may be. The child who is afraid of dogs does not necessarily remember any occasion upon which a dog injured him or frightened him or he heard that it was dangerous. He is only aware of feeling afraid of this dog *now*, however harmless the animal may be. Every event tends to be valued by itself instead of as the last link of a chain which has been developed in inexorable continuity.

CONTINUITY OF DEVELOPMENT.

The development of our lives is a continuous process beginning before we are born and ending, so far as our present awareness extends, at death. It is important to realise the fact that this development is initiated prior to what we are aware of as individual experience. The nine months development of the fœtus in the uterus must be considered as part of the continuity of life's experience. It is perhaps associated, for instance, with our ultimate evaluation of rhythm and music. The most primitive source of rhythmic satisfaction is probably the tom-tom, with the first beat louder than the second. Our earliest experience of the "tom-te" rhythm is probably intra-uterine, the developing ear of the fœtus becoming accustomed to the sound of the maternal arteries. All later experience of "tom-te" rhythm, and its associations, must be evaluated upon the basis of this earliest experience. Similarly, in order to appreciate the psychology of the emotional value and recuperative qualities of a holiday at the seaside, it is necessary to associate them with our earliest experience of the comfort of water—namely, during our intra-uterine experience.

But the continuity of mind development begins from a still earlier point than that of conception. I is as if two converging lines traced back to a single point are found behind it to diverge beyond to an ever-widening infinity. This earlier experience which determines our valuation of *this* and *now* is altogethe beyond and outside our own lives. *It is derived from the sum of racial experience inborn within us as par of our hereditary equipment.* The chick that can peck seeds as soon as it comes out of the shell i reacting to a deeper pattern than any that has been acquired out of its own limited experience. It i an inborn tendency of behaviour, acquired from the sum of innumerable experiences by great numbers of its species in the past. We are born equipped with a certain anatomical pattern which is independent of experience, with organs and nerves which develop and fulfil their function according to an inborn law Similarly, there are the inborn instinctive patterns with their associated feelings shared by all individuals of the species, operating in each in a similar fashion and towards a similar end. These are more than individual experiences, and so the value which we give to this and that, to *now* and *then*, will depend upon hereditary instinctive and emotional factors, a well as upon the sum of those experiences which we have acquired during our lifetime.

FREE WILL AND DETERMINISM.

Freud, from his own psychological standpoint, has put an end to the age-long controversy between free will and determinism, by declaring finally that free will is an illusion and that our behaviour is determined by forces and experiences of which we are mainly unconscious. His conclusions will not satisfy the great majority, for if free will is only an illusion it is an illusion that will die very hard. Without committing ourselves one way or the other, it is at least necessary to recognise a greater degree of what is known as "determinism" than is generally recognised. Much that we consider to be free will is found on investigation merely to be the last link of a chain, the origin of which is traced back to unconscious sources. Freud proved to his own satisfaction that if an individual were asked to think of a number of three digits and thought of "257," the choice of the number was in fact due to various selective motives of which the individual himself was unaware, and that he could not under the circumstances have chosen any other numbers than those which he did.

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* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. The first, second, and third lectures of the series appeared on Jan. 3rd, 10th, and 17th, 1931, respectively

Similarly, where there is apparently an option as to which path shall be chosen, the actual selective factor will be found to be unconscious, rather than a conscious exercise of free will. We are the victims, not of an external fate, but of an internal compulsion, the origin of which lies outside our own experience, perhaps—and probably outside consciousness also. Seeing individual life in this perspective, we must be willing to forgo some of the illusion of free will, retaining it however as an ideal which may be obtained when we are free—if ever—from this unconscious motivation.

Association.

The previous paragraphs have dealt with continuity, but continuity by itself does not account for the development of mind. A second factor is required in order to give us a balanced aspect of mind in both time and space. Besides proceeding in continuous lines, the development of mind takes place through what is called "association." The process of association is one by which innumerable cross-references and comparisons are made, experiences being split up, evaluated, and compared with one another. We then conceive of the mind as being a network of associations, the number of potential links being infinitely extensible as the process of splitting up and comparison is developed.

The factor which determines the associative link is one of a common *emotional value.* "There is something about *this* that reminds me of *that*, because I feel somewhat similar about *this* and about *that.*" To say that there is a common quality of *meaning* puts the same idea into a different form, because meaning is a more abstract and highly differentiated value of a primary quality of "feeling about" a certain object.

Association may be of many different kinds, but is always based upon some quality of similarity. For instance, "bell, tell" has an association by virtue of a similarity of sound without regard to meaning. "Bell, tone" has an association from the idea of "bell" to a certain quality of its function. This is an association upon a more abstract level of ideation. "Bell, bicycle" introduces a more individual feeling quality. I would not associate "bell" with "bicycle" unless "bicycle" at the moment possessed an individual value of considerable importance to me. Another person might associate "bell" with "visitor," if one were expected, because that would possess a stronger individual valuation.

The method introduced by Freud, known as "free association," has been of inestimable value in determining the cause of a patient's feelings about any particular event. No event stands alone, because any event must strike many links of association with other events similar or different. The value to the patient of *this* event will therefore depend upon the links of association. For instance, fear of this dog *now*, is linked by an association with that dog *then.* Perhaps the fear of dogs has led, by an extension of the association, to fear of other animals. Feelings originally associated with only one object tend to become extended by further association with an ever-widening group, linked by some bond of similarity. The free association method consists of obtaining the patient's immediate and uncensored reaction to a stimulus word. The patient, being in a relaxed and passive state, lets his mind respond to the stimulus word with the first association link and this may be continued with other associations. What is happening is a quite irrational and unconscious process, but it is nevertheless logically determined. The patient is merely telling the doctor that to him there is some common quality of feeling between each of the words which he is saying and the one which preceded them. A similar result is obtained by saying to a patient, "What does so and so remind you of, or what do you feel about so and so?" In each case we are trying to trace back, through links having a common quality of feeling, to the original source from which the feeling sprang.

TRANSFERRED AFFECTS.

We can now consider what is meant by the term "transferred affect," which is an extremely important one for our understanding of psychological medicine. The "affect" is the feeling value which becomes transferred under certain circumstances to an associated idea. For example, the feeling which I originally had about *that* dog which frightened me becomes transferred from that dog to all dogs and so to *this* dog. The transferred affect may be carried still further to include other four-legged animals, in which case the ultimate result of the original experience of being frightened by the dog is that I have now become afraid of all four-legged animals. The feeling of fear "affect" has been transferred from *that* through *these* to *this*, and from *then* to *now*, and my value of *this, now* is determined by the transferred affect from *that, then.*

From another point of view the conception of free association and the transferred affect may be usefully linked with that introduced by Pavlov and used a great deal in the behaviourist school of psychology—namely, the "conditioned reflex." The conditioned reflex is one that has been acquired as a result of an experience being built on, as it were, to an original experience.

Salivation in dogs is a simple reflex consequence of the sight of food. If, at the same time as food is presented a bell is rung and this experience is repeated on a sufficient number of occasions, the bell and food become so intimately associated that in the absence of food the bell becomes an adequate stimulus to produce the reflex of salivation. The bell stimulus and salivation response is then said to be a conditioned reflex.

Examples have been given already in previous lectures of association and transferred affects. For instance, the patient who was terrified of all policemen because he felt that they were going to punish him, had transferred to "policemen" that feeling which had originally been associated with his father at the time of the guilty experience with his elderly female relative. Similarly, the patient who wrote the notes about the umbrella and her shoe, had transferred affects from her father's person to the umbrella, and from her own to the shoe through unconscious feeling association. Affects are usually transferred in this way to representative *symbols*, which then have the feeling value of the original object.

COMPLEXES.

The conception of complexes is also a very fundamental one in psychology. Unfortunately some confusion has arisen owing to the fact that the word has been used to cover two rather different meanings. On the one hand, any group of ideas associated with a single feeling, such as love or patriotism is, by some psychologists, described as a "complex" and the word is then used synonymously with "sentiment." This use of the word is gradually and wisely being abandoned. The use of the word "complex" should be limited to *pathological* association of a feeling with an object—in other words, to those cases in which a transferred affect has taken place. For example, in the cases cited above, one patient has a policeman complex, another an umbrella complex, because the quality of feeling tone has been transferred from the original object to some other object to which the feeling does not in fact rationally belong.

The word "complex" is also used to describe certain pathological states of feeling which are not simply due to transferred affects, such as the "Œdipus," "Electra," and "inferiority" complexes. In each of these transferred affects have taken place, but the particular complex indicated by these names shows a certain pattern of associated feelings, and tendencies towards certain patterns of behaviour. They will be dealt with individually in this and successive lectures.

TRAUMATA.

In the early days of Freud's psychological work he was largely interested in certain phenomena of hysteria, and he came to the conclusion that he was dealing with cases in which "transferred affect" had taken place from some previous injurious experience which had usually occurred in childhood. Pathological states of feeling and behaviour were thought by him to have been caused by some definite previous injurious experience which was called a "trauma" or wound. His further investigations showed him that his earlier results were in many cases at any rate due to a fallacy, the patient having described to him events as if they had actually taken place which were, in fact, only products of an hysterical imagination (i.e., wish-fulfilment, as in the case of rape mentioned in a previous lecture).

However, the importance of traumata or injurious experiences in the ætiology of psychopathological developments again came into great prominence during and after the war. It was found that the shock of being blown up or some particularly terrifying episode had caused the development of the pathological state, and the investigation of ætiological traumata assumed further importance. It was found that by inducing the patient again to live through the injurious experience, an abreaction or emotional recapitulation of the events took place which, by reassociation and reorganisation, restored the patient's feelings and behaviour to the normal.

By itself, however, this was in many cases found not to be enough, and once again the ætiological importance of traumata was found to be insufficient. Why did certain cases develop shell-shock whilst others did not? Besides the injurious episode, there was always the personal psychological factor and, as mentioned already in the first lecture, the type of case which was most liable to shell-shock was the one who was unable to face the fact that his feelings were those of fear. It became apparent therefore that abreaction of the experience was not in itself all-important, but effective therapeutics required an investigation and elucidation of the patient's individual psychological reactions.

The importance of traumata has nevertheless remained exaggerated, and it is very common indeed to find patients, especially those who have read a little psychological literature, expecting to have all their troubles cleared up by the discovery of some single important event of childhood or infancy which had long been forgotten. But this is very like an infantile wish-fulfilment of "something for nothing." It is perfectly true that traumatic episodes have sometimes occurred, and, especially when they have become forgotten, beneficial results occasionally bordering upon the miraculous have been derived from their recollection and reassociation. On the other hand, it must be remembered that the patient's individual psychology still remains an all-important factor, and that there are many cases in which the trouble lies, not in any single experience, but in the patient's individual tendency *to react to normal experience in an abnormal way*.

There is another way in which the idea of trauma still remains useful, and this is when it is extended to include those cases in which the injurious experience, instead of happening in a single event, has been spread over many events and over a long period of time. The "single event" type of trauma might be, for example, some premature injurious sexual experience or a thrashing from a drunken father. A far more common type of injurious experience, however, is that which is spread over a long period of time. The father, instead of beating the child *once* in drunken anger, might have been one of those stern, orthodox, patriarchal parents whose influence upon the sensitive emotional system of the child is far too crude and severe to permit of its normal development according to its own inward light. The sentimental, tender-hearted, over-affectionate type of doting mother is again an example of an oft-repeated injurious experience, which can have the most devastating effect upon the child's ultimate development. The "spoilt child" type is therefore the commonest result of repeated "traumatic" experiences in infancy and childhood.

"Recapitulation."

In order to understand aright the development of mind we must know what is meant by the principle of "recapitulation." Recapitulation is the process by which an individual life repeats a line of development which represents a sum of previous racial experiences. The best example of recapitulation is that which takes place in the development of the fœtus *in utero*. During this nine months the fœtus passes through all those stages of development which have marked the biological progress of the human race in the ultimate evolution of humanity. It begins as a unicellular structure which, after dividing into many cells, eventually becomes differentiated into fish-form, frog-form, mammal-form, monkey-form, and finally human form. It is as if the time factor has been infinitely speeded up, and within the short space of nine months the racial evolution of many thousands of years is repeated in the individual. But recapitulation is not limited to the intra-uterine life. Progress is continued after the child is born, and as the development of the nervous system is completed the child becomes able to make the complicated coördinated movements of walking and talking.

It is nonsense to talk about *teaching* a child to walk; it learns as soon as its nervous system has been developed far enough for it to do so. The same remark applies to much other so-called teaching, which can never hope to do more than develop innate potentialities. It is therefore not sufficient to regard these developments as being due to something that the child has been taught. It is quite true that example and encouragement are useful, but they would be of no use were it not for a primary inborn capacity which must develop to a certain stage before such coördinated behaviour can be attained.

If we appreciate rightly the importance of recapitulation, we shall realise that education must always be secondary to it. The capacity to learn depends upon the state of development to which the individual has attained, and this capacity for development represents the stage of *recapitulation* which he has reached. It is very important therefore to recognise the existence of stages of emotional development in infancy, childhood, and adolescence, which are right enough at certain ages, and will be grown out of in due course, if all goes well. It is adult interference which too often prevents normal development, either by snubbing criticism or sentimental prejudice. The adult easily takes upon himself the task of curbing and criticising conduct of which he does not approve in the child, trying to introduce his own ideas which are not necessarily correct, by teaching them as an external pattern to which the child is expected to conform. But this method is fundamentally incorrect. The child does not require to be taught, but *educated*—that is, to be allowed to develop and express all that he *socially* can, that is concurrent with his own recapitulatory phase at any particular moment. It is perhaps wise to stress the word *socially* in view of certain exaggerated beliefs in letting children have their own way. *Social adjustment* must always be part of individual development.

ENDOGAMY.

We can now consider some of the phases of emotional recapitulation which appear during individual development. It is only possible to outline their general principles, recognising some degree both of modification and similarity as essential in different cases. It is not wise to make cast-iron generalisations where human life is concerned. But it is certainly true that, through our understanding of emotional recapitulation, it is possible more clearly both to foretell and to understand much of human behaviour that would otherwise be obscure to us.

The axiom we are about to consider may be put as follows: "Behaviour cannot be understood merely in terms of individual experience." It is much more, because the individual starts with *inborn feeling and behaviour tendencies*, developing at different ages, originating in a distant past, and therefore not always apparently relevant or suited to the circumstances in which they occur. The individual's awareness of his recapitulation can only be in terms of his immediate experience. He does not know that he is living again the racial past, but he is more or less aware of certain feeling states which he can only consider as a reaction to his experience of his environment. It is to these feeling patterns of emotional recapitulation that we must now direct our attention. They will be common to all individuals, in the same way that anatomical and nerve patterns are common to all individuals, but will be subject in the same way to individual variation.

In order to correlate the emotional development of infancy with recapitulation of a previous racial experience, it is necessary to go far back in the history of evolution of the race. The infant is in a position of primitive dependence, and its environment is limited to experience of the intimate family circle. There is no doubt that the most intense emotional experience of infancy is associated with the mother or mother-surrogate for both sexes, the father being of secondary importance. This fact of the primary satisfaction derived from the intimacy with the mother through the food-function is of the greatest importance in individual psychology. It throws the infant literally "into the arms of" the mother and from this primary basis is derived all later experience of emotional gratification. We must remember, in the case of the boy, the difference of the two sexes, and this will lead us to anticipate certain differences of ultimate evaluation as between the boy and the girl, because her primary association with the mother does not show the same sexual polarity.

Recent anthropological researches suggest that in the origin of man there is a common factor in what is known as the "endogamous principle." Whatever type of civilisation is investigated, the further the search goes back, the more evidence is there of the earliest state of tribal organisation being "endogamous"—that is, being based upon a marriage system within the limits of the family or tribal circle. It is therefore suggested as a working hypothesis that this endogamous orientation of primitive racial emotion may be associated through recapitulation with a similar endogamous orientation in individual infancy. Firstly, it is a fact of individual experience that those who matter most in infancy are mother, father, nurse, and family. Secondly, it may be granted that it is the earliest experiences which leave the deepest impression upon the sensitive plate of the developing mind. Thirdly, the outstanding importance of this phase is the commonest clinical experience of psychologists. It is therefore both interesting and helpful to link it up tentatively with past racial experience, as an example of recapitulation.

In Egypt it was the custom for fathers to marry daughters, mothers sons, and brothers sisters. Marriage outside a very limited circle was under this system regarded as immoral. The system of endogamy was still in force in Egypt at the time of Moses' leadership of the Israelites. Much of the Mosaic law was based upon his appreciation of medical factors, and amongst his other qualities for leadership Moses must be considered as a biologist He seems to have appreciated some of the principles which are at the present day in common use by stock-breeders. It is well known that inbreeding from healthy progressive stock may be used to increase their desirable characteristics, but if there are decadent factors then inbreeding will intensify the bad characteristics just as much as it may intensify the good. Apparently Moses believed that inbreeding in the Egyptian stock was giving rise to a progressive decadence, and we may imagine that it was for this reason that he ordered the Israelites: "After the doings of the land of Egypt, wherein ye dwelt, shall ye not do." (Leviticus, xviii., 3.)

The Mosaic law is at the present day standardised in English Church Law and appears in the English prayer-book as the Table of Kindred and Affinity, in which the taboo of endogamy has gone so far as to forbid marriage with the deceased wife's father's sister and the marriage of cousins.

It may be objected that the evidence is extremely thin on which to try to correlate the emotional *orientation of infancy* with that of the primitive endogamous system. In fact it is impossible to prove this correlation in our attempt to get a true perspective. It is, nevertheless, very useful and as a working hypothesis it coincides with the proved experience of psychological research. It is as if the emotional orientation of the infant is essentially endogamous up to a period of one to three years, at the end of which recapitulatory phase the Mosaic taboo or its equivalent operates unconsciously and automatically to repress the incest motive. All the world over the incest motive is regarded with horror, because of the primitive taboo under which it has racially been placed, and this taboo also seems to be an object of individual recapitulation.

Psychologists are aware of the prevalence of this incest motive in the emotional lives of their patients. Freud has called it the "nuclear complex of neurosis." It is in fact probably the most important primary motive, but it requires considerable amplification from the simple conception of sexual incest before we can see it in correct perspective. There is no doubt of the recapitulation of the sexual factor in infancy, in spite of the absence of physiological sexual development. Any intimate and detailed experience of the psychology of patients will easily demonstrate this to be the case, in spite of the initial presence of a "resistance," due to the incest taboo, on the part of the investigator. The experience of the infant is so intimately associated with the mother that the pull of the maternal apron-strings remains the greatest problem operating against individual emotional development.

The name which has been given by Freud to the incest motive is, in the case of the male, the "Œdipus complex" and in the case of the female the "Electra complex." The story of Œdipus is one of the Greek myths, and it has already been mentioned in Lecture II. that myths are derived from unconscious emotional sources.

Œdipus was the son of Laius, King of Thebes, and Jocasta, his wife. His father, having learnt from an oracle that he was doomed to perish at the hands of his son, exposed Œdipus on Mount Cythaeron immediately after his birth, with the object of killing him. The child was found, however, by a shepherd in the service of the King of Crete, and was taken to the King's palace where he was reared by him as his own child. When Œdipus grew up the prophesy of the oracle was fulfilled, because in a scuffle he slew his father without recognising him.

In the Kingdom of Thebes there was a celebrated sphinx who put a riddle to every Theban who passed and whoever was unable to solve it was killed by the monster. Œdipus solved the riddle and as a reward became the husband of his mother, Jocasta, by whom he had several children. When Œdipus discovered the guilty nature of his alliance he put out his eyes and Jocasta hanged herself.

The choice of Electra as the feminine counterpart of Œdipus is due to the legend that she avenged the death of her father, Agamemnon, by assisting in the slaying of her mother, Clytemnestra. The case mentioned in Lecture II. of the girl who stated that she had been raped by her father is an excellent example of the Electra motive, as was shown in her attitude towards her mother and frequent occurrences of death wishes in which her mother figured.

The following is one of many cases which illustrate the Œdipus motive.

CASE M.—Male, unmarried, aged 24, professional musician. *Complaint:* Homosexuality with cough fetishism, self-consciousness, insomnia, depression, and suicidal feelings. *Family history:* His grandfather was an alcoholic. The patient had one sister 10 years older than himself.

Physical state: Nothing of importance.

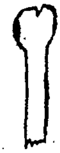
History: The description of the fetishism was as follows. Hearing a cough of a definite character in certain individuals was the strongest sexual stimulus which he experienced. The person afflicted with the cough had to be of a rather rough working-class type and about the age of 25. If he heard a cough of a desirable kind he would follow it wherever the owner might be going in the hope that the cough would work up to a paroxysm, which would provide him with the crisis of his own sexual excitement. He stated that the man must be healthy and handsome with a large mouth and thickish lips, and that it was most important that the mouth should *not* be covered during the paroxysm of the coughing.

His mother had died when he was 21, and he stated that he had never got over it. He *traced the attractiveness of coughing back to the fact that up to the time when he was about 7 his mother had always had a severe cough.* He was most devoted to his mother and said that his life had always centred around her and that, as a child, he had "yelled if she went out until she came back." He stated that he loved kissing his mother and all the physical things that one does with one's mother, and he had had *many phantasies of intimacy of various degrees with her.* As he grew up he said that he had never found anything to take the place of what he had had in childhood from his mother. He *had no use for girls of his own age* but got on well with elderly women. He stated particularly that he had never felt any protective love for anyone, but only love of being protected.

When he was about 8 he came to actually dislike his mother's cough, but from that period he always became *attracted to people of his own sex, in whom a cough became* the focus of his sexual gratification. A man of about 40 years of age, however, with a cough gave him an intense feeling of nausea and fear.

With regard to his father, he said that he had never got on with him and had always been afraid of him. His father had a rather violent temper and he felt that his father ill-treated his mother. As a small child, in the mornings he used to try to get into their bedroom, and remembered the satisfaction of being in bed with his mother, especially if she had her back turned towards her husband. He said that he never lost an indefinable feeling of grudge against his father because of the way he had treated his wife. "It would not worry me" he said, "if I never saw my father again." With regard to his sister, he said, "I always feel I should be more fond of my sister if I did not feel I grudged her her place in my mother's affection." He could never tolerate the thought of growing up, and said that if anybody said "be a man," it made him ill with disgust.

He had a dream during his treatment: "I seemed to be in school but it was not exactly a school. It was either a hospital or a prison, in which I had to attend some lectures, but I found myself in bed under treatment. Near my bed there was a coffin in which I was told was my mother's body, from which my father's brother was going to take something out and give it to me. I was told it was some kind of material of evacuation which I should have to take into the lavatory. I felt the whole thing was ghastly, awful, and I said that I could not possibly do it, but I was told I must." He had no idea at first what had to be taken from his mother's body, and it was suggested after a while that he should draw what came into his mind. When he started to draw he was quite uncertain, but eventually produced the accompanying diagram, the significance of which would seem to be apparent, although he did not at first recognise what he had drawn.



He stated that he was quite sure he did not want any sort of cure, but only that things might be just as they were without any resultant dissatisfaction. When he realised the sexual and childish nature of his attitude towards his mother he accepted it freely and consciously. He said "I know it is perfectly true that I would like to have intercourse with my mother better than anything else in the world," but the acceptance of such an attitude in consciousness is very unusual. (The cough fetishism is an excellent example of a "complex" due to a "transferred affect.")

THE PATRIARCHAL SYSTEM.

Another aspect of primitive family life, which is important from the recapitulatory standpoint, is to be found in the "patriarchal system." The primitive tribal unit was held together by the tribal chief or patriarch, who was in a very real sense the head and owner of the tribal family. The patriarch possessed supreme rights over the members and property of the tribe and held his sway until such time as he was no longer able to maintain it. It is easy to imagine that his authority was maintained only in the face of considerable resistance on the part of certain stronger and younger members of the tribe. As the patriarch grew old and feeble, the power of his rule inevitably lessened and the criticism of those younger members who wished to take his place grew stronger. Eventually, either the patriarch died or was removed, and after a certain amount of quarrelling amongst the rival sons for the leadership of the tribe a new patriarch was installed in his stead.

The two outstanding points are first of all the rivalry between the patriarchal head and his younger tribal competitors, and secondly, the rivalry amongst those who wish to become the patriarch in his stead.

This conception of a *recapitulation of unconscious rivalry* adds to our knowledge and understanding of adolescent development. On the one hand stands the father, with the knowledge and power acquired through the status of his years. On the other, the growing sons whose developing urge towards the fulfilment of their lives leads them to regard the father with criticism and disapproval. It is important to look deeper than the levels of conscious rationalisation and superficial adaptation. Beneath this there is an underlying rivalry due to recapitulation of a primitive patriarchal system, deeply seated in the emotional lives of fathers and sons. It is in consequence of this that the father is liable to behave disparagingly towards the groping omniscience of adolescence. The other side of the picture is even more apparent, the son's intolerance of paternal authority and what he feels to be his prejudiced conservatism. It is not always that the rivalry breaks out into conscious conflict, but very frequently this recapitulation of primitive emotions is the cause of overt domestic quarrels.

The older generation needs to be conscious of this underlying tendency to regard the rising generation as rivals, to be held down and disparaged. Similarly, the younger generation need to be conscious of their underlying feeling that only the young know what they are talking about. The rivalry and mutual disparagement is very real and because it is unconscious it may be very dangerous. The patriarchal head of the family belongs by no means always to the remote past. His prototype ruled many Victorian families, against which the present generation is reacting, as the pendulum swings with a sometimes excessive freedom. If it is possible to detach ourselves from processes of unconscious recapitulation, we can discover virtues and feelings of sympathy both in father and in growing son, in die-hard Tory, and in hot-headed "left winger."

The passage of years and the acquiring of experience may add to our wisdom, but unfortunately this is not necessarily the case. A lifetime is but a small space in which to arrive at ultimate goals and whole-hearted wisdom, but it is nevertheless the only measure of our span. We are inclined to regard the sum of our own experience as ultimate and objective wisdom, whereas it is no more than an incomplete total of our prejudices. Both the virtue and the vice of adolescence lies in its assumption of omnipotence and omniscience. Whatever the patriarch may feel, his is only the past and to his sons he must be content to leave the future. Whatever the sons may feel, they must eventually recognise that with the passing of the years they will become not much different from their fathers. The patriarchs were great rulers, but patriarchs are liable to fail as educators of the next generation if they rule too strongly.

There is another characteristic of adolescence which may be noted at this point. It is a characteristic feature of the living organism, that it tends to react in the opposite direction to that in which it is pushed. It develops the opposing corrective to the forces which act upon it. Growing lives cannot be pushed or driven for very long without developing an emotional attitude of corrective rebellion. The patriarchal system can be maintained so long as growth remains subjugated, but it is very difficult to maintain the yoke. The stronger the patriarchal suppression the more intense will be the ultimate rebellious upheaval. A successful patriarchal system will either produce sterility or revulsion, whether it be in the nation or the more limited environment of the family.

It must be borne in mind that phenomena of recapitulation are largely independent of individual experience, although they may be modified or exaggerated by it. Of this point the following is an illustrative case, because the father was not obviously of the stern patriarchal type.

CASE N.—Boy, unmarried, aged 20. Eldest son, two younger brothers, two younger sisters. *Family history:* Good, but showed a difficult combination of optimistic, subjective, artistic strain on his mother's side and a pessimistic, abstract, legal type of mind on his father's. *Physical health:* Good.

History: The boy had always been rather difficult and eccentric. He had gone at the age of 8 to a boarding school and at the age of 14 to a public school, but had never been very happy or friendly except with boys who, like himself, found it difficult to fit in. At school he had shown more intelligence than the average but it had always been applied on strongly individualistic lines. He was particularly keen on mechanical contrivances and inventions and on amassing encyclopædic knowledge of doubtful practical utility. He was a destructive critic who was never satisfied with the existing order of things, or with such educational and social opportunities as came his way.

At home he never got on with his family and was regarded as a thorn in the domestic flesh, especially by his father. His father was shy, nervous, and retiring, and had brought up his family on the principle of letting them take care of themselves, except for certain terrifying injunctions which he frequently tried to impose on them, such as the statement that drinking hot tea induced cancer, and the general belief that young people never knew what they were talking about.

When the boy left school he went from one job to another, never staying anywhere longer than a few months because it had not afforded him sufficient opportunity to fulfil his egotism and because of his destructive criticism of the system in which he found himself. He combined curiosity and hot temper to a remarkable degree, with the result that he got himself into trouble with his superiors, and was finally referred to a doctor, who advised that he should be occupied with nothing more stimulating or responsible than digging in his father's garden. This he proceeded to do with growing irritation for 18 months, trying his hardest to exercise his inventive capacity by numerous ambitious and unpractical schemes, while his political opinions became progressively "left-wing." Finally, he could bear it no longer and wrote an ultimatum to his father to the effect that he wished to disown him, that his meals were to be served apart, and if his father interfered with him in any way he was not to be considered responsible for his behaviour. Upon the strength of this evidence the boy was certified, and for four months in a mental hospital his behaviour was exemplary.

He then came under analytical treatment and it was easy to understand that his intense enthusiasm for Communism was a defence for his unexpressed egotism. He was an intense propagandist, utterly intolerant of convention, whether national, religious, or domestic. Communism was the only outlet for his egotism and was adopted passionately and uncritically. His psychology was that of the complete rebel, but it was as dogmatic, intolerant, and authoritative as that of any dictatorial patriarch. His dreams were often of being on a high place such as a rock or tower and being attacked from behind by an elderly man who was trying to push him down to his destruction.

He had no sex life and no interest in girls, nor indeed in anything other than of an entirely material or scientific kind. His system of philosophy was inflexibly rationalised but it was in fact only symptomatic. In its dependence upon unconscious emotional sources it was as unscientific as the most emotional type of evangelical hysteria, in spite of his own belief to the contrary.

BECONTREE HEALTH CENTRE.—Brigadier-General R. B. Colvin, Lord Lieutenant of Essex, recently opened a health centre in association with the King George Hospital, Ilford. It provides for the urban district of Dagenham an out-patient department for consultation and treatment, and also houses the Infants' Welfare Clinic of the local authority. The building has cost £7200. In a speech at the opening ceremony Sir Cecil Levita, a former chairman of the London County Council, expressed the opinion that it would be better and more economical for the county councils to make block grants to the existing voluntary hospitals for the discharge of the health services which they themselves are bound to provide rather than to erect their own hospitals.

SPECIAL ARTICLES

SMALL-POX MAJOR AND MINOR.

A NOTE on various designations of small-pox and their epidemiological and prophylactic significance, prepared by Dr. Ricardo Jorge, was presented to the Permanent Committee of the Office International d'Hygiène Publique at its session of May, 1930, and having been approved by this Committee appears as an appendix to the further report[1] of the Rolleston Committee on Vaccination. In classical medicine, Dr. Jorge writes, a precise "system" of variola had been elaborated in the past which was so clear and impressive as to leave little to be desired. Based on obvious and well-marked external characteristics, this system became the current medical coin. Moreover, variola being a very common complaint, the general public itself created very similar categories, and in different countries baptised them with expressive and picturesque common names.

A Secession from the Orthodox.

The clinical variations implied in this "system" of variola governed diagnosis and prognosis without in any way disturbing the basic unity of the disease variola, or small-pox—a unity for which the facts of epidemiological control afforded a sufficient guarantee. With each epidemic outbreak, provided it was sufficiently extensive and severe, one saw unfolded the whole film of the varieties of variola, a gamut ranging from the most innocuous of abortive forms to severest confluent and hæmorrhagic types. All the links of the chain were firmly connected one to the other as they showed themselves interchangeable and reversible—being merely variable results of the same contagion.

Into this well ordered kingdom with precise and clearly marked boundaries, there appeared one day (well within our memory, during the present quarter of the present century) signs of secession from the orthodox. It had been noticed that a sequence of epidemics, sometimes great in number and wide in their distribution, were not conforming exactly to the established formulas of variola. Were they local, or accidental, or episodic anomalies? They had not this appearance. Discovered successively in America, Africa, and Australia, and there thought of as exotic, they presently came also to crop up in Europe itself in a way which demanded notice. To the new and troublesome variety of variola thus appearing in so many quarters all sorts of names were given; some of them invented on the usual lines of medical vocabulary, others of popular origin: variola minor, variola-varicella, para-variola, mild small-pox, white-pox, milk-pox, amaas, alastrim, &c.

All these variants, differentiated in time and geographically, came ultimately to appear identical and synonymous, and to produce a united front. Battle was joined between the two domains, a duel more passionate than is usually seen in the peaceful fields of modern medicine. Is there one variola only, or are there two variolas? This was the crux, and in the course of the contest over it, as so often happens, discussion turned to confusion. A problem well expounded is already half solved, but in this case the question for debate is too often badly stated. Words are used to which different meanings are attached, and misunderstandings become inevitable. Is it possible to bring order into the matter, if only to fix the significance and value of the terminology in current use?

If we were concerned with an unimportant disease, the task would not be worth so much expenditure of energy, but small-pox is a dangerous pestilence and a pestilence dear to the heart of preventive medicine which has found out how to subdue it and which is unwilling to admit anything that can hamper or obscure the efficiency of its prophylaxis or that can dim the brightness of its achievements. Strong sentiment animates the discussion; the possibility of weakening prophylaxis. Here, however, there is a point to be made clear; to assert that the question of prophylaxis remains outside the question of ontology, that anti-variola defence keeps its position safe and sound, and that the conception of alastrim does not take away from the accepted authority on which the strict application of measures necessary to prevent the ravages of variola is based.

Two International Texts.

There are two official international texts to consider which are concerned with variola—the Internationa Sanitary Convention of 1926, and the Convention of the List of Causes of Death, 1929.

The first text (the International Sanitary Convention deals with variola. It does not know "alastrim" or mentio it. The second text, however, expressly separates variol minor (alastrim) and variola major. Are these two text incompatible therefore? By no means; no such discordance did or could have entered into the intention of thei authors. In the International List as adopted there is onl one *main heading or rubric—Variola. Variola minor* an variola major are two sub-headings or sub-rubrics. I inserting them it was intended to provide for the possibilit of preparing statistical data on the frequency and appearance of these two varieties, whose existence it is impossib to disregard.

The International Sanitary Convention, on the oth hand, has only kept to the use of the generic term variol it being understood that, whichever or whatever form may take, it is a disease liable to compulsory notificati and covered by the several requirements laid down for in the Convention. There is no other admissible interpretation. It has been suspected that by attaching the lab "mild small-pox" or "alastrim" to an epidemic, use being made of a subterfuge or euphemism by which to clo true small-pox. The word camouflage even has been used in this connexion. Thus in times past cholera, still more dreaded, was hidden under the mantle of "cholerine."

But we are not aware that evidence of this contention has been established or that its actual existence has been suspected. The term variola minor does not usurp the place of variola major. On the contrary, the former is often *substituted for the latter because the designation alastrim* is not an officially accepted term in many countries. Varicella, which everyone distinguishes from variola, itself not seldom serves to disguise the latter, not intentionally, it is true, but because of errors of diagnosis made by practitioners to whom variola is no longer familiar. Cases of variola or even of alastrim, passing undetected under the innocent name of varicella, have been the source of formidable epidemics. On the occasion of the recent outbreak in Holland, though considered by the sanitary authorities at the beginning of its course to be alastrim, the customary compulsory notification was immediately put into force, and international appraisement with all the necessary details followed in due course.

In any event an invasion of alastrim, even of the mildest variety, is by no means to be desired, and if it assumes large proportions, as has happened at Guadeloupe, at San Miguel, and elsewhere, the illness produced causes considerable damage and economic loss. Moreover, fatalities, however few, cannot be regarded as of no account. As far as local preventive measures are concerned, alastrim is not exempt from obligatory notification by medical practitioners *nor in principle from the measures* calculated to check its spread; particularly so since it is difficult and imprudent to be dogmatic, when confronted with the early cases, as to what kind of variola one is dealing with. Recent legislation in Holland recognises the duality, but without excluding the application to variola minor of strict precautions necessary for the control of variola major.

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[1] See THE LANCET, Jan. 10th, p. 85.

As in all epidemic disease, the practical question lies in the degree and dexterity of the necessary sanitary control. The dissemblance of alastrim from orthodox small-pox, due to the benign nature it sometimes assumes, often puts a check on the exercise of the whole forces of prophylaxis. If small-pox has drawn all these forces of prophylaxis into combat against it, it is simply because it is extremely dangerous. The salutary fear of its ravages becomes enfeebled and almost disappears in the eyes of the public when in the face of outbreaks of almost nonfatal mild small-pox.

Meaning of the New Terms.

We may now turn to the meaning which should be attached to the new terms which have been introduced into the variological vocabulary and consider their legitimate effect in regard to older designations. In this connexion it is merely a triviality to say that variola is "benign" or "severe"; in all infections there are variations in severity within very wide limits. So also to say that an epidemic of variola is benign or severe is merely to state an impression of the whole or that there has been a definite statistical finding—for instance, that there has been an excess of mild cases over the usual average.

From the earliest times we have known of the existence of epidemics of small-pox that were very severe and others that were much less severe; those which Sydenham called "*variolæ mitiores.*" Why, then, it may be asked, should we now create a new and separate category—that of variola minor or "alastrim"? Is not this "alastrim" only a new and useless name for the old term "varioloid," which denoted a clinical form of the disease which was modified, mitigated or abortive? The reply is that it is an error to adopt or compare these two varieties and to regard them as synonymous. The question implies a misinterpretation which should first be eliminated from the discussion altogether. Everyone recognises the inappropriateness of the term "varioloid"—an unfortunate term introduced by Thompson in 1820. Its use should be discontinued, but our conservative terminology holds on to it and persists in using it in the ordinary language of medicine, which we must admit not to be sufficiently disciplined. It is well to consider how "varioloid" has acquired the favour which it has so little merited. When the diffusion of the Jennerian method had made its weight felt on the evolution of epidemics, large numbers of cases occurred in which the disease and the rash were only a faint outline of the features of true variola. It was found that vaccinated subjects could be attacked with a harmless abortive type of small-pox which was only the shadow of its parent; hence "varioloid." The people of different countries, as is their custom for any infections which begin alarmingly but quickly clear up, used picturesque metaphors to describe what was in their eyes no more than the caricature of a disease—the same has happened for variola minor.

The term "varioloid" was itself badly chosen, as it entailed two errors. First, "varioloid" is not a species different from ordinary variola, for the two are interchangeable, variola giving rise to varioloid and vice versa. Next, varioloid is not invariably a degenerated form due to vaccination and peculiar to the vaccinated. It is to be found, although much less commonly, among the unvaccinated and it had already been observed in epidemics which had occurred prior to Jenner's discovery. Varioloid may present a definite clinical form, but it is not an epidemic variety, and it would be incongruous to talk of epidemics of varioloid. The total number of cases of varioloid in a particular outbreak may be high, but once they have been separated, the cases of ordinary type, more or less severe, which remain, are sufficient to characterise the epidemic.

There are the following differences between "varioloid" and alastrim. In "varioloid," particularly amongst the vaccinated, the exanthematic elements abort when once they have appeared; the papule subsides, the vesicle dries up, only a few scattered elements reach pustulation, and even then the little pustule dries up as soon as it is formed. Furthermore there is no secondary fever and no pitting, or only very rarely so. In alastrim there are many cases which are indistinguishable from varioloid, but there are others in which the disease assumes all the known forms of variola from discrete to confluent, and one may even add the hæmorrhagic, but without departing from the rule of benignity. This forms the characteristic of variola minor. In variola major the prognosis and the issue are determined by the intensity of the rash, and the severity of the case is graded according to its exanthematic scale, discrete, coherent and confluent. Alastrim often displays a magnificent eruption, generalised or localised, coherent or even confluent. But in spite of this the patient does not succumb to suppurative fever, which is most rare; he feels comfortable and well in himself; in good condition, as if he were but slightly indisposed, or not ill at all. Toxic infection, in fact, is reduced to a minimum.

It is this individual paradox, leading up to the collective paradox, of progress which is nearly always favourable and is insignificant in the matter of fatality, that gives to alastrim its right to a separate place. It is no mere matter of a clinical type, as is the case with varioloid, but of a noso-epidemiological type, since it has maintained these characteristics throughout the course of long and extensive epidemics occurring, it is important to note, among populations which have not had the benefits of vaccination. One epidemic of it has followed another in the same locality for a considerable series of years, going on always in the same way. And when these epidemics move away from the locality and spread elsewhere, they keep the same character. They sometimes co-exist with variola without intermingling.

An Example.

This is a fact which seems to be settled by experience of the past and by present happenings. If, for example, one takes any recent record of epidemiological movements and examines the incidence of small-pox throughout the world, one will find such examples as the following:—

England and Wales.—Week ending April 12th, 423 cases, two deaths provisionally attributed to small-pox; for the year 1929, 10,940 cases, 29 deaths, fatality 0·26 per cent.

United States.—For the year 1927, 34,327 cases, 163 deaths, fatality 0·47 per cent.

Canada.—For the year 1929, 1952 cases, five deaths, fatality 0·25 per cent.

Belgian Congo.—For the year 1929, 2433 cases, 60 deaths, fatality 2·16 per cent.

and by contrast:—

Bombay.—Week ending April 19th, 114 cases, 78 deaths, fatality 68·4 per cent.; for the year 1929, 2013 cases, 1068 deaths, fatality 53·05 per cent.

Pondicherry.—For the year 1929, 500 cases, 393 deaths, fatality 78·0 per cent.

British India.—For the year 1929, 148,106 cases, 34,393 deaths, fatality 23·2 per cent.

The contrast shown by this series of figures is striking. They are the two different orders of fact which it has been intended to express by *variola major* and *variola minor*. No more than this, and no prejudice being imported by this distinction into prophylaxis or into clinical judgment. Epidemiology alone is taken into account. It is epidemiology which requires us to separate the two epidemic progressions as far as possible and which asks us, by systematic inquiry regarding cases and through statistical methods, to increase our knowledge of the manner in which this paradoxical phenomenon comes about.

A Fixed and Stable Mutation.

There is one point the capital importance of which must be insisted upon; the question whether the two varieties are interchangeable, and whether an epidemic of ordinary variola major can result from alastrim or variola minor, and vice versa; since up to the present they have shown themselves immiscible, each keeping its own independence. Experimental pathology has lately provided valuable contributions to our knowledge, and although the problem is not yet entirely solved, there is reason to believe, from animal experiments, that the two viruses are of the same nature, but that in the case of alastrim in man the toxic-infectious power of the virus has been greatly reduced. Vaccine lymph is also a derivative of variola virus; vaccine can be made by starting with variola virus, but one cannot reconstitute smallpox from such a vaccine; there is no reversibility. If the alastrim virus, as everything seems to indicate, represents a fixed and stable mutation of that of ordinary variola, we do not yet know the conditions which determine that mutation and cannot therefore say on experimental grounds whether they are or are not reversible. But, Dr. Jorge concludes, we must repeat that, judging by epidemiological observations, the two varieties do not seem to be interchangeable.

PARIS.

(FROM OUR OWN CORRESPONDENTS.)

THE INTERNATIONAL UNION OF DOCTORS.

HOUSED in Paris, at 95 Rue du Cherche-Midi, the International Union of Doctors or *l'Association professionnelle internationale des médecins* carries on the activities of a trade-union rather than of a scientific body. It is a live wire, largely owing to the enterprise and activity of its Secretary-General, Dr. Fernand Decourt. It was established in July, 1926, after a year's preparatory work by a provisional committee, and according to its statutes its aims are to form a central clearing house of information and to be a link between national groups of doctors so that each may profit from the experiences of the rest in the study of the numerous professional problems affecting their private and social lives. Strictly scientific subjects are not dealt with, or only in so far as they present sociological problems. Since the secretariat began work in Jan., 1927, as many as 16 different international inquiries have been set on foot, among the most important being those about sickness insurance, specialising in medicine, the illegal practice of medicine, administrative measures against maternal mortality, and the antituberculosis and antisyphilitic campaigns. Reports on these inquiries are published in the Union's quarterly journal—*La revue internationale de médecine professionnelle et sociale*—which is published in French, but which has many readers abroad. The organisation of the Union is most simple: Each country adhering to the Union, be it as small as Luxembourg, with only a few hundred members, or as large as the United States, with some 72,000 doctors, appoints a national delegate who is the only official connecting link between his country and the Union. He is usually the president or secretary-general of his national medical association. The general council is composed of these delegates, and it meets once a year on four successive days in one of the European capitals. It met in Paris last year, and this year it will meet in Budapest. The general council nominates an executive committee of ten members to deal with current and urgent affairs. There is no president. The treasurer is a Dutchman. Beginning with a modest membership of six, the Union now includes 31 countries.

OUR DAILY BREAD IN FRANCE.

Just before Christmas the *Confédération des syndicats médicaux français* held its general annual assembly and dealt with various matters of medico-social importance. The second subject on the agenda was: Fraud in the Making of Flour and Bread. The author of the report on this subject was Dr. M. Lenglet, the representative of the *Confédération* on the *Conseil supérieur de l'hygiène.* He traced the evolution of flour and bread making during the past 50 years, showing how difficult the task of making bread has become owing to the changes wrought in the flour. Going through the various processes of flour and bread making, he must have ended by giving the most impressionable among his audience the conviction that in its ultimate metamorphosis the loaf in France to-day would be more accurately described as a chemist's shop than as the staff of life straight from the mill. It would surely, however, be fairer to use the term adulteration than fraud in connexion with the many different chemical processes which in the course of years have been evolved by the two great industries concerned. Be that as it may, Dr. Lenglet's report was received with applause, and a resolution was adopted urging the Ministry of Health to solve this problem at once, to take as a matter of urgency all the necessary measures, with severe penalties, for dealing with the frauds in bread-making which may have serious effects on the health of the whole nation. The *Confédération* further gave its representative the mandate to protest on behalf of the medical profession before the *Conseil supérieur* against the granting of licences which entail the employment in bread making of substances injurious to health. The vigorous wording of this resolution, the emphatic comments of the chairman of the meeting, Dr. Dibos, and the sympathetic applause of the audience should all serve to strengthen Dr. Lenglet's hands in the further pursuit of his objective.

LECTURES ON TROPICAL MEDICINE IN PARIS.

The forthcoming Colonial Exhibition, so admirably advertised by the new French postage stamps, will include a course of lectures on tropical medicine between July 22nd and 31st. The programme is remarkably comprehensive. Infant welfare among the natives, tropical diseases including syphilis, social hygiene and welfare work, drinking water, diseases transmitted by animals, colonial pharmacology and, at the end, sanitary aviation with demonstration of aeroplanes. Foreigners as well as Frenchmen will be allowed to take part in the ensuing discussions, and the fee of Fr.100 (Fr.50 for relations and students) will incidentally give participants in this course the substantial benefits accorded to visitors by travel agencies and restaurants within the exhibition. Further information can be obtained about these lectures from the *Secrétariat général des journées coloniales*, 112 Bd. Haussmann, Paris.

LECTURES IN ENGLISH TO MEDICAL VISITORS TO PARIS.

Another course of lectures has been arranged in response to letters on this subject addressed by Prof. Dubé of Montreal to Prof. Roussy and Prof. Sergent. They will be held under the auspices of the *Association pour le développement des relations médicales avec l'étranger* in July. The sponsors of this course will be Profs. Sergent, Gosser, Chevassu, Sorrel, Claude, Morax, Lemaitre, Ledoux-Lebard, and Roussy. The subjects will be diseases of the lungs, surgery of the digestive tract and liver, urology, orthopædics, psychiatry, ophthalmology, oto-rhino-laryngology, radiology, and radium treatment.

PENALTIES FOR THE TYPHOID EPIDEMIC IN LYON.

Some two years ago a suburb of Lyon suffered from a serious outbreak of typhoid fever for which the local water company and its director were held responsible. After a lengthy trial they were condemned last June by the *Tribunal correctionnel* which sentenced the director to a year's conditional imprisonment (*avec sursis*) and the company to material damages for the benefit of its victims. The company appealed against this verdict, and the Court of Appeal of Lyon has now passed judgment; so far from mitigating any of the sentences, it has increased most of the damages awarded against the company to the sufferers.

MENTAL SPECIALIST INJURED BY A PATIENT.

Dr. Raviart, professor of mental diseases at the faculty of Lille, has been badly wounded by a bullet in the lumbar region by a lady who happens to be the wife of a physician. She had shown for a long time definite signs of insanity and had been certificated by another physician and placed in a mental institution 18 months ago, at a time when Dr. Raviart was attending a congress in Spain. The very day after his return the lady escaped from the institution, but nevertheless continued to regard Dr. Raviart as the cause of her incarceration. The accident is one of a kind all too frequent in France where mental specialists constantly live in danger of their lives.

LATENT EPILEPSY IN SCHOOL-CHILDREN.

Dr. Gilbert Robin, who specialises in Paris on the mental diseases of children, made a communication to the Academy of Medicine on the relation of school inhibition to latent epilepsy. Dr. Robin considers that when a young scholar shows marked hesitation in answering a question and blunders as if he were just out of a dream the teacher should think of epilepsy. The clinical picture is characteristic. The child does not show emotion; he stands still with a peculiar way of looking, either fixedly or with wandering eyes. Investigation shows that the child fails to respond, not because he does not know the answer, but because he has nothing to tell, his brain being empty at the time. Sometimes amnesia follows. Other stigmata of epilepsy may be found; one of these is a permanent slow cerebration. The importance of differentiation from simple emotional disturbance lies in the fact that for minor epilepsy much improvement may be expected from luminal combined with small doses of arsphenamine, mercury, or bismuth, whether evidence of syphilis is present or not.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

DIET PROBLEMS.

Prof. Carl von Noorden recently read a paper before the Berlin Society for Internal Medicine on some of the problems of diet. Certain reformers, he said, think that human blood is too acid and must be made alkaline by diet. Actually the reaction of the blood is constant; on the other hand, the reaction of the tissues may be altered to some extent, for it depends on the mineral content of the cells in which the surplus of minerals introduced from the diet is stored. Food can produce mineralisation or demineralisation, but it has not yet been ascertained whether the clinical effect of certain dietetic methods is based on this action. Every forced diet—for instance, war diet, prisoners' diet, or milk diet—produces a certain amount of demineralisation. As to common salt, it is true that we consume too much; instead of the usual quantity of 15 g. daily, 8 to 10 g. are sufficient. The use of a great quantity of salt is a sign that the food is badly prepared, the salt concealing the bad taste. A diet without common salt does not exist, and the so-called salt-free diet is merely one to which no salt is added. The Gerson diet recommended for tuberculosis as salt-free contains 6 or 7 g. daily. Speaking on vegetarianism Prof. von Noorden said he thought that 60 to 90 g. of nitrogen, which is the average quantity in ordinary food, is not excessive. A diet with little or no albumin is, of course, very useful in certain heart and renal diseases, but in nervous patients it is advantageous only by suggestion. An ordinary diet contains enough vitamins; the modern overestimation of vitamins by the public has almost become a mania, and has led to vitamin intoxication in certain cases. Raw food is poor in fat and is useful in combating adiposity and arthritis. A starvation diet is, as a rule, unnecessary; in chronic cases it is enough to prescribe days of partial abstinence once or twice a week, and allow the patients more liberal fare for the rest of the time.

MANSLAUGHTER BY NEGLIGENCE.

An unqualified practitioner treated a patient who complained of pain in the chest, and dissuaded him from consulting a medical man. Hæmoptysis and high fever developed, but he continued to treat the patient on his own responsibility. On the fourth day the family introduced a medical man, who diagnosed severe pneumonia and pleurisy, and two days later the patient died. The unqualified practitioner was prosecuted for manslaughter by gross negligence, and sentenced by the local court to three months' imprisonment. According to the verdict his negligence consisted in having undertaken the case without having any medical training. A medical expert witness testified that the life might have been saved if a stimulating remedy had been prescribed at the beginning of the illness. It was further considered negligence that the patient was dissuaded from consulting a qualified medical practitioner. On appeal the High Court confirmed the judgment. The accused pleaded that he had believed in the efficacy of his treatment, but the High Court said that this was not a sufficient excuse, and blamed him because he had not discovered the obvious worsening of the patient's condition. This judgment makes it clear that an unqualified person with no medical knowledge is liable to be punished if he undertakes to treat serious cases.

PERCAIN ANÆSTHESIA.

Dr. Widenhorn reports in the *Archiv für Klinische Chirurgie* the results obtained in 160 cases with percain anæsthesia. To combat the vasodilator effect of the drug 10 drops of a 0·1 per cent. solution of adrenalin were added to 100 c.cm. of the 0·1 per cent. solution of percain used for subcutaneous injection. Percain proved useful in rhino-laryngeal operations in a 1 per cent. solution, and excellent results were obtained in urological work where the urethra could be made anæsthetic by 10–12 c.cm. of a 0·15 or 0·25 per cent. solution (with three drops of 0·1 per cent. adrenalin for 100 c.cm.). For anæsthesia of the bladder 30 c.cm. were required to produce anæsthesia within five to ten minutes. In hæmorrhage of the bladder, rinsing with this solution has an anæsthetic and styptic effect. It is thus indicated in tenesmus, contracted bladder, hæmorrhagic cystitis, and vesical cancer. Percain must not be introduced directly into the circulation, because it produces a sudden decline of blood pressure and respiratory troubles. It is, therefore, not admissible for lumbar, paravertebral, or splanchnic anæsthesia. Its action is many times stronger than that of cocaine.

STORING OF RADIOGRAPHIC FILMS.

The German Röntgen Association discussed at their last meeting the question of the safe preservation of X ray films, for which they have published rules in conjunction with film producers, fire insurance companies, and fire brigade authorities. According to these rules, so-called safety films should be used instead of combustible celluloid films. The celluloid film is dangerous not only because it is inflammable, but also because in burning it develops poisonous gas, especially hydrocyanic acid. Only small quantities of film should be kept in laboratories or wards. The archives, which in big hospitals sometimes contain hundreds of thousands of films, must be kept in fireproof magazines, and these should be at a distance from the sick rooms and situated in the upper floor so that gas can escape.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of three counties, a county borough, and a rural district:—

Name of district and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality in childbirth.
Aberdeen .. (110,127) extra burghal	20·3	13·3	0·92*	1·30	1·7	—	72†/—	—	2·4‡
Fife .. .. (110,797) extra-burghal	17·6	11·7	0·69	1·22	2·2	1·4	74/—	41	10·0
Ipswich .. (85,800)	16·7	12·2	0·93	1·58	2·2	1·8	53/30	—	2·8
Soke of Peterborough (51,220)	15·9	13·4	0·62	2·00	2·3	2·0	57/—	—	3·7
West Lancashire, R.D. (23,270)	13·6	12·0	0·66	1·50	2·1	1·4	63/—	—	3·1

Registered stillbirths per 100 live births: Ipswich 4·8, West Lancashire 3·1.

Notified stillbirths per 100 live births: Fife 4·8, Soke of Peterborough 1·9.

* In a population of 148,703, which includes all the ten burghs.

† In a population of 125,747, which excludes the burghs of Peterhead and Fraserburgh.

‡ From sepsis only in a population of 125,747.

County of Aberdeen.

Dr. Harry J. Rae's report shows that there are eight districts and that for tuberculosis, school and V.D. service the county scheme embraces ten burghs, for maternity and child welfare eight burghs, and for other public health services nine burghs. Up to the end of 1929 Peterhead had a separate medical officer of health. An important matter under consideration during the year was the concentration of isolation hospital accommodation. There are at present 12 such hospitals and their number has to be cut down. During 1929 the burghs had a lower birth-rate and infant mortality-rate but a higher death-rate than the districts. The percentage of illegitimate births in the eight districts grouped was 17·3, and in nine burghs grouped 10·1. During the last four years there has been a marked increase in the provision of new houses. Dr. Rae points out that the conservation of existing houses in rural areas is perhaps more important than the provision of new houses. The Housing (Rural Workers) Act, 1926, is, in his opinion, the only Housing Act that has tended to conserve rural housing and so prevent rural depopulation. Several districts have taken advantage of this Act. In 1927 there were 50 applications, in 1928 136, and in 1929 199. Of the 1929 applications, 102 came from the Deer district. Aberdeenshire has done better than most counties, but the erroneous impression has existed that the Act does not apply to burghs. However, in 1929 four applications came from Inverurie Burgh and one from Huntly. Dr. Rae hopes that this Act will be even more extensively used by the recently appointed district councils. As regards new housing schemes in villages the cost is frequently greatly increased by the need to provide an adequate water-supply and up-to-date sewage disposal.

Immunisation has given more satisfactory results against diphtheria than against scarlet fever. About 460 children were immunised against one or both during the year. There were 40 notifications of typhoid fever and 3 deaths; 28 of these occurred in the Deer district and were mostly associated with a village milk-supply. The whole of the dairyman's family was affected simultaneously and the milk-supply was stopped. An effort is made to provide hospital treatment for pneumonia in five hospitals. There were 442 cases notified and 82 received hospital treatment, apart from those treated in the Aberdeen voluntary hospitals. Domiciliary nursing is also supplied for pneumonia cases. Nursing services are provided by 38 associations, employing 39 nurses, of whom 34 are Queen's nurses. The associations are subsidised and the nurses undertake health duties for all the county schemes. They are not encouraged to act as midwives and only one district nurse in a sparsely populated area is registered as a midwife. It is estimated that ten additional district nurses are needed to cover the whole county. Several of them have motor-cars and motor-cycles. The V.D. scheme is a joint one with Aberdeen city, the north-eastern counties, and Zetland and Orkney. The new venereal cases in 1929 numbered 103. Those who failed to complete treatment numbered 13, as compared with 24 in 1925 and 20 in 1926. Dr. Rae refers to the weak point of the scheme—namely, the inability to secure continuity of treatment until cure is effected.

The veterinary inspector deals with the difficulties met with. The inspection season, when the cows are housed, only lasts from the middle of November until the end of April and much time is wasted in futile visits. In the Deer district during 1929 the roads were impassable for part of this short period. In any case a county of 2000 square miles cannot be dealt with by one inspector. Most of the dairy farms were visited once. The cows in milk inspected numbered nearly 10,000 and the dry cows nearly 2000. Among these, 22 were found with tuberculous udders and 39 with other forms of tuberculosis. It is pointed out that there are many unregistered dairy farms supplying villages in the case of which inspection is more needed than for the registered farms. Primitive customs also prevail in farms which produce butter.

> "Some have a special cream jar which is never washed, the inner surface of the jar showing a very uneven appearance caused by the series of rings formed by many hardened layers of solidified cream deposited on the jar. This jar and its condition is considered necessary for the 'ripening' of the cream."

In some cases the cream jar is kept in a not too clean kitchen, used as a family living-room and perhaps for sleeping purposes. The condition of the registered farms was maintained at a high level. Cow-keepers who adopt the practice of daily grooming and clipping of the hair never give it up. A large number feed twice a day only, with no decrease in the milk yield, and more farmers are adopting a ration combined with recording of the milk yield instead of the old unsatisfactory method of giving all the cows the same ration regardless of their yield.

County of Fife.

Dr. G. Pratt Yule shows that the county did not suffer excessively from the influenza epidemic. The death-rate of 11·7 compares with 11·2 in 1928 and 11·8 in 1927; while the infant mortality (74) compares with 81·9 for 1928 and 86·5 for 1927. The percentage of illegitimate births was 7·98, and Dr. Yule points out that every year approximately half the infant deaths are neonatal. Maternity and child welfare work is domiciliary at present, and Dr. Yule looks forward to the establishment of centres which can be used for school-children also. Child welfare work is one of the services transferred from small burghs to the county council under the Local Government Act, 1929, and the clinics in operation in some of these burghs will become available for surrounding landward areas. There is a clamant need for an adequate maternity service furnishing medical, nursing, and hospital supervision for the mother in pregnancy and childbirth and for mother and infant thereafter.

During the last two years there has been a slight check to the decline in the tuberculosis mortality. This decline began, evidently as the result of economic and social progress, years before the county council adopted special measures in 1912 and has continued steadily since that date. The work of the tuberculosis scheme is purely domiciliary. An effort is made to examine contacts, but occasionally a family of contacts is lost sight of after the death or removal of a cured patient from the register. The lack of an X ray apparatus is a handicap in the diagnosis of doubtful cases and entails admission to Glenlomond sanatorium for a short period of observation. It is customary for bone and joint cases to be taken to the general hospitals, whereas their treatment would be better carried out under sanatorium conditions. Increasing use is being made of the Housing (Rural Workers) Act, 1926, and the approved applications from the four districts numbered 121. Dr. Yule points out that, prior to the operation of this Act, nothing had been done or was even contemplated for the better housing of rural and agricultural workers, whose need was always obvious. He sincerely hopes that the Act will be renewed as otherwise, with the agricultural industry in its present state, rural housing will go from bad to worse.

Progress has been made with the enforcement of the dairy by-laws and the county veterinary surgeon inspected over 14,000 cows in the year. Those condemned under the Tuberculosis Order numbered 78 and included 18 suffering from tubercle of the udder.

Ipswich.

Dr. A. M. N. Pringle reports that the municipal maternity home of eight beds has become inadequate, and is to be extended. The enlarged home will have 17 beds. During 1929 167 cases were admitted, including 31 from outside areas. About 10 per cent. of the Ipswich mothers enter the home for confinement. Two-thirds of the confinements were conducted by the midwives and in one-third medical assistance was sought. Dr. Pringle gives particulars of twin pregnancies in Ipswich during the last nine years. The result of 58 male twin pregnancies was 101 live and 15 stillbirths; the result of 47 female twin pregnancies was 89 live and 5 stillbirths; the result of 56 mixed twin pregnancies was 98 live and 14 stillbirths. The percentage of still to live births was therefore 14·8, 5·6, and 14·3 in the respective groups. The 14 stillbirths in the third group were 7 male and 7 female. The percentage of stillbirths to live births for the whole series was 11·8, about three times the ordinary stillbirth-rate. A table shows how the age constitution of the population has been changing in recent years, with the diminution of the birth- and death-rates. Although more males are born than females, the higher male death-rate results in Ipswich in 1500 women to 1000 men over 70 and 2 women to 1 man over 80. In 1929 47 per cent. of the female deaths were at ages over 70 but only 36·6 of the male. The effect of the influenza epidemic was relatively slight in Ipswich. Dr. Pringle notes that the type of diphtheria was more severe and that mastoid disease was a frequent complication.

Soke of Peterborough.

Dr. C. Rolleston says that only once since 1907 has such a high death-rate been recorded—namely, in the influenza year of 1918. Pneumonia claimed more victims than ever—viz., 35. In Peterborough City 138 cases were notified and there were 24 deaths. Dr. Rolleston comments on the anomaly that there was no hospital accommodation for pneumonia, whereas hospital beds were occupied by 231 cases of mild small-pox and 98 cases of scarlet fever (of which three died). He recommends the provision of nurses for home treatment and the provision of beds in the local voluntary hospital, the Thorpe-road Institution, or in private nursing homes. Up to now no antenatal centres have been established in the Soke. Dr. Rolleston suggests that a consulting obstetrician should be engaged to visit one of the institutions just mentioned from time to time for the purpose. In 1928 the corporation of Peterborough considered a proposal to erect a small building for this purpose but the proposal was rejected. In tuberculosis Dr. Rolleston's experience leads him to emphasise that every method of diagnosis should be employed and that no case, however advanced, should be given up as hopeless. The present report contains notes of 23 cases treated by artificial pneumothorax since 1916. Seventeen of these persons are in good health and at work, three are in fair health, two are invalids, and one has died. The cases were all advanced ones and in many the tubercle bacilli in the sputum have disappeared. There was one death of an infant from pulmonary tuberculosis. The infant was not wasted, but constantly coughing and spitting and the sputum contained copious tubercle bacilli.

West Lancashire.

This rural district of 61,797 acres lies between the estuaries of the Ribble and the Mersey. It is sparsely populated and mainly agricultural. On the east it touches the Lancashire coalfield, where 114 of the residents work as colliers. Other industries are basket making and market gardening and there is one weaving mill. The areas adjoining Liverpool, Ormskirk, and Southport tend to become residential suburbs for the overflow population. There is no public water-supply but water mains are brought into the district by the water departments of seven neighbouring towns. The source of the water is wells sunk in the upper and middle Bunter beds, and the hardness of the water is very variable and erratic. A table shows that it may be anything from 7 to 33 degrees. In the township of Bispham there is no public supply available and the inhabitants depend on wells and stored roof water. In another district reclaimed from the sea, only roof water is available and the owner of the farms conveys water to his tenants when the rainwater supply fails. The cleaning of these drinking water tanks and the elimination of the dirt from the roofs does not receive adequate attention.

There are 15 townships in the district and the danger of being misled by statistics for small populations is illustrated by a table showing that in six of the townships there was no infant mortality—

whilst North Meols, a former fishing village, removed from the sea by a reclaimed tract, had an infant mortality-rate of 228. There is severe overcrowding in many parts of the area and several back-to-back houses need to be converted. A council scheme for new houses was to be put in hand in 1930. The description of the centrally situated isolation hospital shows that it is run on thoroughly up-to-date lines. It serves a total population of 32,000 and plans have been prepared for a new pavilion. There is no general hospital in the district.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 10TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 228 (last week 164); scarlet fever, 1649; diphtheria, 1263; enteric fever, 20; pneumonia, 1638; puerperal fever, 44; puerperal pyrexia, 114; cerebro-spinal fever, 26; acute poliomyelitis, 3; encephalitis lethargica, 13; dysentery, 19; ophthalmia neonatorum, 95. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 13th–14th was as follows: Small-pox, 215 under treatment, 3 under observation (last week 224 and 4 respectively); scarlet fever, 1608; diphtheria, 1971; enteric fever, 16; measles, 80; whooping-cough, 133; puerperal fever, 24 (plus 7 babies); encephalitis lethargica, 121; poliomyelitis, 1; "other diseases," 53. At St. Margaret's Hospital there were 22 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 77 (0) from measles, 8 (0) from scarlet fever, 21 (1) from whooping-cough, 32 (6) from diphtheria, 72 (19) from diarrhœa and enteritis under two years, and 101 (16) from influenza. The figures in parentheses are those for London itself.

The fatal case of enteric fever outside London occurred at Liverpool. The same city reported 15 deaths from measles, Hull 12, Bristol 9, Birmingham 8, Newcastle-on-Tyne 6, West Bromwich and Sunderland each 5, and Gillingham 3 from the same disease. Liverpool and Manchester each reported 3 deaths from whooping-cough. Diphtheria claimed 5 victims at Liverpool, 2 each at Smethwick and Birkenhead. Diarrhœa was credited with 10 deaths at Liverpool, 5 at Manchester, 4 each at Birmingham and Sheffield. Of the 85 fatal cases of influenza outside London, 15 were reported from Liverpool, 10 from Birmingham, and 4 from Manchester.

The number of stillbirths notified during the week was 305 (corresponding to a rate of 43 per 1000 births), including 61 in London.

AN IMPORTED CASE OF PLAGUE.

The case of plague reported from the Port of Brist
in the return for the week ended Jan. 3rd was foun
on board the s.s. *Mariongo de Thermiotis* which le
Novorossisk (Black Sea) on Dec. 6th with a carg
of wheat, called at Zoulgoldak on the 7th and Andr
(Greece) on the 11th, and reached Avonmouth o
the 30th. The second engineer sickened on the 13
with fever and pain in the groin, his illness bei
recognised as bubonic plague on arrival at Avonmout
where he was removed to hospital. Only one rat w
caught on board and that showed no sign of plagu
The ship was fumigated and no further cases occurr

CORRESPONDENCE

BISMUTH FOR LUPUS ERYTHEMATOSUS.

To the Editor of THE LANCET.

SIR,—In an article which you published last week (p. 126) Dr. R. M. B. MacKenna mentions that he has not been able to find any record of the treatment of acute lupus erythematosus with bismuth. As I was responsible for the treatment in 1929 of a patient suffering from acute generalising lupus erythematosus with bismuth injections, the following particulars may be of interest:

The patient was first seen by me on August 15th, 1929. She appeared to be ill and had patches of inflammation on each malar prominence, the nose, the lobes of both ears, finger tips, and an oval patch on the tongue. She was advised to stay in bed and apply calamine lotion. On Sept. 12th bi-weekly injections of bisglucol were commenced. The patient appeared to improve slightly at first, but this treatment was discontinued after the ninth injection as the pulse-rate was increasing, the temperature rising, and she was losing weight rapidly. She died on Nov. 13th.

I may say that I have treated 14 cases of the localised variety of lupus erythematosus with intramuscular injections of bismuth since March, 1929, most of them with very gratifying results, and I believe this to be the method of choice in the treatment of the complaint.

I am, Sir, yours faithfully,
RUPERT HALLAM,
Hon. Physician in Charge of the Skin Department,
Jan. 17th, 1931. Royal Infirmary, Sheffield.

MOTIVES AND MECHANISMS OF THE MIND.

To the Editor of THE LANCET.

SIR,—As you say editorially (1931, p. 29) the medical profession is being forced, partly from without, to consider psychology more intensively. Whether we will it or not, the public will have psychology and even children begin to talk of "complexes." Lead
ship is needed, but do we want the noble professi
of medicine to pander to the libidinous tendencies
this generation?

Slang terms, or "pictographic expressions" bei
to the fore, I may justifiably say that this arti
(THE LANCET, Jan. 17th, p. 147) "gets
goat." This phrase, like the nursery rhymes
those sinks of sexual allusion when psychologica
analysed (p. 149), is pregnant with meaning
goat, Pan, maenads, saturnalia. What enorm
will emerge from the analysis of Jack Horner a
Little Bo Peep? But why should we stop at ar
and nursery rhymes? Why not resolve etymolo
completely into its psychological meaning? Sla
terms and expletives would be easy, the mark of
phallus would readily be unearthed. Many ordina
words could be resolved into some beastliness. Th
"slowly"; note the sinister sibilant, followed by
peculiar expression of the parturient cow and
terminal diminutive. Another example, the name
the first object I see on looking up, "picture
pic-pick, obviously a triune phallus and ure, Goeth
Sir Urien, Silenus, urine. These will suffice,
many words could be made unpleasant and
exceptions classed as of uncertain derivation; th
with the help of the excretory and genital process
we should have a new psychologic etymology.

We are going too far. Already we incur
ridicule of the laity. In one best seller it is relat
that the social "worker" gained more and m
interest from the girls he "analysed," for th
guessed what he wanted. Evoe in his parable of
dogs (*Punch*, Dec. 10th, 1930) coins the beautiful w
"psychothomphoolery." There is no doubt th
sex, an important part of the ego, is of some impo
ance in the ætiology of mental sickness, but it is

the only factor; it is highly probable, too, that sexual symptoms are secondary to somatic abnormalities.

What happens to the patients who submit to the practitioners of this sexual cult? I see a number of them afterwards. One of them told me that her examiner was so insistent on her having committed, in thought or deed, some indecency, that she fabricated a story which immediately satisfied him. Even if truth, or perversion of truth stimulated by the suggestion of the examiner, is achieved, what is the benefit? The patient is briefly gratified by a new "explanation," couched in the fashionable language which converts what should be the stigma of worthlessness (sickness) into an interesting, even laudable, "complex." But apart from this gratification and that derived from conversation with the more prurient of his acquaintances, he is left where he was.

One example may help to impress my meaning. A youngish medical man consulted me for vague bodily complaints. He was nearly useless, as he had no interest in anything but himself, and he was miserable because he had been unable to cope with work; he had thrown up one post after another and now was unable to face any occupation. He was in fair health and strength, but questioning elicited symptoms of dyspepsia and constipation. He "reacted" to a careful question as to sexual condition with marked reticence, and I did not take a muck rake and stir this slough. It was obvious that he had many complexes, and had been told so. A careful examination showed duodenal infection with hypochlorhydria and a hypertrophic and atonic colon. I left his complexes alone, gave him kaolin, acids, and raw cabbage salads daily. Now, two years later, he writes to say that he is really making good as he has an interesting and growing practice.

Sex is a part, not the whole. What should be the first law of psychology is ignored—Mens sana in corpore sano; the converse should be the second law. Let us first examine the body and its habits, correct, when possible, the errors found. Then with tact and endurance lead the patient onwards until his body is healthy again, and leave the healthy body to heal its sick mind.

I am, Sir, yours faithfully,

Bristol, Jan. 19th, 1931. A. T. TODD.

INTRAVENOUS ANTISEPTICS FOR UTERINE INFECTION.

To the Editor of THE LANCET.

SIR,—With reference to your annotation on this subject in THE LANCET of Jan. 17th (p. 143), a report on the clinical effect in puerperal sepsis of intravenous injections of an acridine dye by Dr. Phillip Oginz of King's County Hospital, New York, published in the *American Journal of Surgery*, November, 1929, is of interest. Oginz used the acridine derivative rivanol (2-ethoxy-6-9-diamino-acridine lactate) and his records are taken from a series of 150 cases. To control results the drug was used only on alternate cases diagnosed as pure sepsis during what he describes as an unfortunate "epidemic" of puerperal infections which occurred in 1924.

The results in one of the case groups may be taken as typical, where the average number of days of fever in the cases treated with intravenous rivanol was 4·8 and where that of the controls was 13·3; the average stay in hospital of the cases treated with rivanol was 14·4, that of the controls being 23·3. The method of administration of this antiseptic appears very simple, 0·1 g. was dissolved in 100 c.cm. of boiling water to make a 1 : 1000 solution, 0·3 g. of sugar being added to each 100 c.cm. For administration 60 to 80 c.cm. of the 1 : 1000 solution was warmed to body temperature and injected very slowly, at least 25 minutes being taken to administer the fluid. Care must be taken, he states, to keep the needle in the vein, as the fluid is irritating to the subcutaneous tissues.

Oginz describes the clinical effect of an injection as follows: "The temperature drops as by crisis within 24 hours. If it subsequently rises, the peak is lower than before. A second injection sends the temperature down to normal, where it usually remains. It is only rarely that more than two doses are required. With the drop in temperature the general condition of the patient improves. Where a positive blood culture has been obtained the effect of rivanol is to render the blood sterile, so that usually after the second, or certainly after the third, injection a positive blood culture can no longer be demonstrated." Whether this is the direct bactericidal effect of the rivanol, or the result of a mobilisation of the body's defensive tissues and fluids, would seem to merit more detailed and extensive experimentation.

I am, Sir, yours faithfully,

GEORGE H. MORRISON, M.B., Ch.B.

Medical Department, Bayer Products Ltd., London,
Jan. 19th, 1931.

THE STRUCTURE OF NEUROSIS.

To the Editor of THE LANCET.

SIR,—In the discussion following Dr. Alfred Adler's lecture on p. 137 of THE LANCET for Jan. 17th, at the end of some remarks I am reported as asking: What happened when an individual could not react normally because of some purely physical disability—for instance, in the organ of the mind itself, as a result of epidemic encephalitis—which I thought "was as well explained by the theory of inferiority as by any other." What I really meant was that behaviour-alterations which occasionally followed epidemic encephalitis might sometimes represent an "inferiority complex," resulting (indirectly) from the physical damage to the organ of the mind.—I am, Sir, yours faithfully,

Harley-street, W., Jan. 17th, 1931. F. PARKES WEBER.

CLINICAL CONDITIONS ASSOCIATED WITH ACHLORHYDRIA.

To the Editor of THE LANCET.

SIR,—In his Schorstein lecture, to which Dr. Hurst refers us, he makes the following statement under the heading of achlorhydria[1]:—

> "It has always been assumed that the achlorhydria is a result of the carcinoma, although none of the numerous theories which have been proposed to explain its occurrence appeared to be satisfactory. A study of the data obtained in our cases, and of those published by other investigators, has convinced me that this assumption is unjustified, and that the achlorhydria is a result of chronic gastritis, which precedes the onset of the carcinoma, and is in fact the most common predisposing condition."

This suggested to us that he regarded achlorhydria as the most important factor in carcinoma of the stomach, and we are sorry if we have misinterpreted him. I am, Sir, yours faithfully,

Manchester, Jan. 19th, 1931. T. H. OLIVER.

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[1] THE LANCET, 1929, ii., 1023.

ACUTE TOXIC HEPATITIS AFTER ACRIFLAVINE.

To the Editor of THE LANCET.

SIR,—An annotation appearing in THE LANCET of Jan. 17th recommended intravenous acriflavine as worthy of trial in early cases of uterine infection. The drug, however, appears to be not devoid of dangers. In the following case the antiseptic was given orally. A man, aged 34, with gonorrhœa but otherwise in good health, received acriflavine by mouth gr. ½ four-hourly by day for two months (probably about 10 grammes in all). At the end of this time he developed jaundice, vomiting, drowsiness, and coma and died at the end of 14 days from the onset of these symptoms. His doctor informs me that at autopsy the liver was small, soft, and yellow. Histologically the liver shows the typical changes of acute toxic hepatitis. There was nothing to suggest a cause for the hepatitis, a condition unknown in gonorrhœa, except that the patient had been given acriflavine. How extensively the drug is given by mouth I do not know, but in the district from which the case came it has been employed as part of the routine treatment of gonorrhœa, and tablets for oral administration, gr. ½ t.d.s., are on the market.

There are a few references in the literature[1] [2] [3] [4] to various mild and immediate symptoms following the exhibition of the drug, but there is only one article which records delayed symptoms and grave hepatic involvement in man. Major D. H. Murray, in Egypt, investigated 118 cases (112 of gonorrhœa and 6 dermatological) which had been treated with intravenous injections of acriflavine.[5] The total dosage in each case ranged between 0·1 and 2·6 grammes. No immediate ill-effects followed the giving of the drug, but after a lapse of eight or more weeks from the final injection as many as 11 per cent. developed what was thought to be catarrhal jaundice. All save one recovered. The fatal case was of great interest. A total of 1·0 g. acriflavine had been administered and eight weeks after the last dose the patient developed jaundice and died within 21 days of the onset. The diagnosis of acute yellow atrophy was confirmed at post-mortem, both macroscopically and microscopically. It was then found that whereas the occurrence of "catarrhal jaundice" among those who had been treated with acriflavine was 11 per cent., the incidence of this disease among the remainder of the troops in the Egyptian Command was only 0·32 per cent. Major Murray concluded that there was a definite relationship between the former cases and the giving of acriflavine. It is important to note that he showed that the size of the dosage had no bearing on the occurrence of the jaundice, and he thought that it must have been due to an idiosyncracy on the part of the patients. In view, however, of the high percentage of 11 he felt that the use of acriflavine intravenously was both dangerous and unjustifiable in the treatment of gonorrhœa. In 1925 Meleney and Zau[6] published some experiments showing that a single intravenous injection of 0·00025 g. per kilo body-weight invariably killed a rabbit within six days and that death was associated with degenerative lesions of the liver and kidney.

There seems good evidence therefore that acriflavine given intravenously may cause grave liver damage. There is little reason to suppose that any less serious results may follow giving the drug by mouth than by the intravenous route, and the present case seems to confirm the view of Major Murray that acute toxic hepatitis may be one of the sequelæ. It is not clear in this instance whether or not the patient had an idiosyncracy to the drug. But in any event it is difficult to avoid the conclusion that the oral administration of acriflavine may sometimes be followed by serious consequences.

I am, Sir, yours faithfully,
EDWARD R. CULLINAN.
Harley-street, W., Jan. 20th, 1931.

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[1] Duhot, R.: Quoted in Brit. Med. Jour., 1926, ii., Epitome, p. 17.

[2] Ferron and Cosnier: Quoted in Brit. Med. Jour., 1926, i., Epitome, p. 90.

[3] Jousion and Vaucel: Presse Médicale, 1926, xxxiv., 193.

[4] Bell, F. McK.: Med. Jour. and Record, 1924, cxx., 437.

[5] Murray, D. H.: Journ. of R.A.M.C., 1930, liv., 19.

[6] Meleney, F. L., and Zau, Z. D.: Jour. Amer. Med. Assoc., 1925, lxxxiv., 337.

LEAKAGE FROM OXYGEN CYLINDERS.

To the Editor of THE LANCET.

SIR,—I would like to call attention to the need of some official regulation to prevent oxygen cylinders from being sold to the public without some guarantee that there has been no serious leakage. Recently the father of a young patient of mine bought two cylinders of oxygen from a local chemist and found them to be almost empty. The need was urgent and the delay might have had serious consequences. Some manufacturers stamp cylinders with their weight full and empty. If this marking were made compulsory the chemist might be required to note the weight when actually sold and at least to adjust the price according to the contents of the cylinders if he cannot supply a full one. For a man earning between £2 and £4 a week the price of a cylinder (12*s*. 6*d*.) is no inconsiderable item, and for this sum he can only buy an invisible pig in an opaque poke (returnable). No stopcock in my experience remains airtight for a period of years, and in small provincial towns the demand for oxygen may be very irregular.

I am, Sir, yours faithfully,
Gillingham, Kent, Jan. 19th, 1931. B. W. ROFFEY.

SERUM TREATMENT OF LOBAR PNEUMONIA.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 27th, 1930, there are two papers which report favourable results in the treatment of lobar pneumonia by means of Felton's serum prepared by the Lederle Laboratories. This was again referred to in an annotation on Jan. 3rd. Boots Pure Drug Co., Ltd., have placed their distributing facilities at the disposal of the Lederle Laboratories, and are now holding supplies of this special serum which are immediately available for the use of medical men in this country. The serum is supplied ready for use in a syringe, each syringe containing 10,000 units Types I. and II.

I am, Sir, yours faithfully,
P. C. BRETT,
Director, Boots Pure Drug Co. Ltd.
Nottingham, Jan. 20th, 1931.

UNIVERSITY OF CAMBRIDGE.—Dr. A. E. Barclay has been appointed University lecturer in medical radiology and electrology.

ENLARGEMENT OF NORTH ORMESBY HOSPITAL.—This Middlesbrough hospital, which is connected with the Anglican community of the Holy Rood, is to be enlarged at a cost of £16,000. The extensions will include three children's wards and two observation wards, sterilising and anæsthetic rooms, surgeons' rooms, two recovery wards, and a theatre for ear, nose, throat, eye, and minor surgery.

OBITUARY

ETHEL BENTHAM, M.D. Brux., M.P.

Dr. Ethel Bentham, who died at her home in Islington early on Monday morning, in her seventy-first year, was the first medical woman to win a seat in the House of Commons.

Born in London, Ethel Bentham was the daughter of the late William Bentham, a Quaker and a Justice of the Peace for the county of Dublin. She was educated at the Alexandra School and College in Dublin, where she organised a Sunday club for shop girls. Deciding to take up medicine as a means of entry to the homes of the poor, she studied at the London School of Medicine for Women, but was obliged to obtain statutory qualifications elsewhere. In 1893 she took the L.M. of the Rotunda Hospital, Dublin, in the following year the triple Scottish qualification, and in 1895 the M.D. of Brussels. After serving as assistant medical officer to the Blackfriars Provident Dispensary for Women and Children, and clinical assistant at the New Hospital for Women, she entered on general practice at Newcastle-upon-Tyne, where she remained for some 15 years, standing unsuccessfully for the city council, which then consisted exclusively of male members.

DR. BENTHAM.

[*Photograph by Elliott & Fry.*

Twenty-five years ago Dr. Bentham removed to London to become a general practitioner in Kensington and to play an active part in local affairs. Here, as in Dublin and Newcastle, her interest in a patient was unsatisfied unless she knew the conditions of work and wages. In any problem affecting the lives of the workers she essayed to answer the age-long question, "Am I my brother's keeper?" It was on her initiative that in 1911 a baby clinic in Kensington was opened as a memorial to Margaret MacDonald and Mary Middleton, and under her guidance this developed into an important and useful centre. The aim of the Women's Labour League in establishing it was to avoid the delays and neglects arising from the distance of hospitals, late diagnosis, and non-recognition by parents of conditions needing attention. Within two years an antenatal clinic was added, then a mothers' dental clinic, later still a hospital with 20 beds for children under five who needed prolonged treatment for such conditions as rheumatism, rickets, and malnutrition. Finally, at the request of the London County Council, the centre undertook the treatment of minor ailments for older children, and a school dental clinic was added. All this while the clinic was worked by general practitioners in strict harmony with other private practitioners in the area. Dr. Bentham herself became ever more convinced that this work was preventing and cutting short the multitudinous ailments of young children, and that in such small centres within easy reach of the homes would be found the real solution of prevention of disease, in so far as prevention lay within the scope of purely medical measures.

In public affairs Dr. Bentham took the prominent place which her enthusiasm and social gifts assured her. For 13 years she was a member of the Kensington borough council. She was one of the first women to be placed on the Commission of Peace, and was soon made chairman of the court dealing with non-attendance at school, always being present when the Bench sat as a children's court. She was a diligent member of the Metropolitan Asylums Board. She served on the national executive of the Labour Party, and finally, in 1929, was elected Member of Parliament for East Islington, after having stood unsuccessfully on three previous occasions.

Dr. E. Honor Bone writes: "All achievement in a life like that of Dr. Ethel Bentham is to be estimated not only by its own completeness but also by its power to influence and to inspire beyond its own immediate sphere. Judged in this way it may be said that one of Dr. Bentham's most important contributions to the social welfare of her time was the inception of the baby clinic. Medical inspection of school-children had long been established in this country, and its value proved, but this woman realised in the course of her practice that the start in preventive medicine should really be made in the earliest months of a child's life, and that it should therefore be possible for mothers to bring their children to some centre where they could get advice about diet and hygiene, and where the doctors would have an opportunity of detecting the first signs of infantile disorder which, if unchecked, might lead to well-marked disease. Many infant welfare centres now exist, and they are firmly established as an integral part of the country's health services, but probably few people realise that the pioneer baby clinic came into existence in Kensington as a memorial to Mary Middleton and Margaret MacDonald—two famous friends of childhood. The suggestion that this was the most fitting memorial to two such women came from Ethel Bentham. The new clinic attracted visitors from far and near, and the idea was carried into other districts, where it flourished even during the difficult years of the war.

"Ethel Bentham had no patience with palliatives. She wanted to get to the root of all social troubles. This was apparent throughout her work, and it was inevitable, therefore, that in her efforts to improve the health of the nation she should begin with the child. It is interesting to reflect that one sharp-cut impression of the Dublin slums, where she became acquainted with the deepest misery of the people, dated back to her childhood's years. Her mother had taken her on some errand of mercy to a tenement house. In a squalid room sat a group of children around a table on which lay a baby in a coffin. One feels how often that scene must have restaged itself in her mind as she worked in the poor districts of Newcastle and Kensington, colouring her views on the housing question and creating a lasting sympathy for the child bred in poverty. It pleases her friends to know that at the very last Ethel Bentham had the gratification of receiving signal recognition of her work. At No. 10, Downing-street a gathering took place in her honour, the Prime Minister expressing the most cordial appreciation of the work she had done for the Mary Middleton and Margaret MacDonald Clinic, and presenting her with an illuminated volume containing its annual reports.

"Ethel Bentham saw a vision—the small child in the poor house preserved from illness rather than cured of it. Her hard common sense and driving energy enmeshed this ideal in terms of the practical. To-day all over the country baby clinics and welfare centres hold their watching brief for the young, and testify to the pity, the wisdom, the constructive mind, and the executive ability which captured the vision splendid."

JOHN JENKINS, M.R.C.S. Eng.

Dr. Jenkins, who died at the Hammersmith Hospital in Ducane-road, Shepherd's Bush, on Jan. 3rd after a brief illness, had been in charge of the hospital from its opening in 1905. Born at Maesteg, Glamorgan, in 1869, he was educated at Cowbridge Grammar School and the University of Wales, going on to University College Hospital, London, for his clinical study, and qualifying in 1902. In December of that year, after a short experience at mental hospitals in the London area, he became assistant to Dr. C. Thackray Parsons at the Fulham Hospital in St. Dunstan's-road, Hammersmith, where he remained until his appointment as a principal. During the war his hospital was taken over by the military authority for orthopædic cases, and he received the rank of Major, R.A.M.C., as officer in charge. Later he became a member of the medical service board of the Ministry of Pensions, and for a long time presided over the military invaliding board. Of his work as a hospital administrator Dr. Parsons writes: "The improvement of his hospital, the maintenance of it in the front rank of the London poor-law infirmaries, absorbed him. He wore himself out in his devotion to it. He knew how to get the best out of his staff, to stimulate them in their work, and to maintain a strict discipline whilst retaining their affection. His was a full life. Work time and leisure time he filled with interest. He read widely and with discrimination; he was a good shot. Keenly interested in all mechanical things, motoring was one of his great joys. With his genius for friendship he had a wide circle of friends, and bound them to him by his sympathy and practical advice and help in difficulties. Married in 1905, no man was more fortunate in his wife. They were never apart from the day of their marriage, and were one in thought, interests, and aims. We who knew him knew how much he owed to her in times of stress and in times of peace."

CHUNG YIK WANG, M.D., F.R.C.P. Edin.

From Hong-Kong comes the news of the death of Dr. C. Y. Wang, professor of pathology in the University at the early age of 42. Prof. Wang was the youngest of five sons of the Rev. Yuk Cho Wang, of Hong-Kong; he was educated at Queen's College there, and at Edinburgh and Manchester Universities, taking the highest distinctions in medicine at the former and in science and public health at the latter. He also graduated with honours at the Hong-Kong College of Medicine, sharing the gold medals with his brother Chung Ching. After obtaining these qualifications he returned to Edinburgh and worked in the department of bacteriology and pathology at the Royal College of Physicians under Prof. James Ritchie, being also assistant superintendent of the bacteriological department at the Royal Infirmary. The outcome of this experience was a series of papers on complement fixation in tubercle and syphilis, and on other serum reactions, a number of which appeared in our own columns. One of the most exhaustive of these dealt with a precipitation test carried out in parallel with the Wassermann reaction with remarkably concordant results; the work begun at Edinburgh was brought to a conclusion in his own department at Hong-Kong. As was natural at Edinburgh he became interested in tuberculosis of bovine origin and his writings cover such subjects as the frequency of tuberculous infection, the isolation of tubercle bacilli from sputum, and an experimental study of latent tuberculosis. He also elaborated a new culture medium for the tubercle bacillus. It was in 1920 that he was appointed to the chair in Hong-Kong, and each year since has seen some original contribution from his pen, including a small handbook of pathology. Whilst still in Edinburgh Prof. Wang married Miss Florence Maud Folkard who, with two sons, survives him.

MEDICAL NEWS

University of Oxford.

At recent examinations the following candidates satisfied the examiners in the undermentioned subjects:—

Medicine, Surgery, and Obstetrics.—G. H. Bateman, Fairfax Bell, R. T. V. Clarke, F. R. Crookes, H. R. J. Donald, H. C. Harley, R. S. Harrison, M. A. Hatt, J. M. Lees, R. D. Newton, N. C. Parfit, W. G. Rees, E. H. Rink, B. T. Squires, and F. M. Trefusis.

Forensic Medicine and Hygiene.—E. J. Baldwin, D. S. Bateman, G. H. Bateman, R. R. Bomford, N. P. Bruce, J. M. L. Burtenshaw, F. R. Crookes, T. M. Davie, H. W. Davies, Newton Heath, J. H. Hunt, K. N. Irvine, O. M. Capper Johnson, H. de B. Kempthorne, R. M. Marshall, Q. St. L. Myles, M. W. C. Oldfield, W. G. Rees, E. H. Rink, and B. T. Squires.

Pathology.—E. J. Baldwin, S. W. T. Bentall, R. R. Bomford, Edward Braithwaite, F. W. Brown, N. P. Bruce, H. W. Davies, R. C. Garman, H. F. Moseley, J. A. Nunn, T. R. Plummer, T. W. H. Porter, J. L. Ryce, G. E. Scott, J. A. E. Scott, H. C. Wadge, E. J. Williams, and C. H. Yeoh.

An examination for a Radcliffe Travelling Fellowship of the annual value of £300, and tenable for two years, will begin at the University Museum on Feb. 24th.

Candidates must have passed all the examinations required by the University for the degrees of B.A. and B.M. They must not have exceeded four years from the time of passing the last examination required for the degree of B.M. The Fellowship will be vacated by a Fellow who spends more than nine months in the whole within the United Kingdom. Papers will be set in physiology, pathology, and preventive medicine, and a subject will be proposed for an essay. There will also be a practical examination in pathology. Candidates may offer in addition a special branch of either medicine or surgery. Names, addresses, and qualifications must be sent to the Regius Professor of Medicine, University Museum, by Feb. 11th.

Society for Relief of Widows and Orphans of Medical Men.

At the quarterly court of directors held on Jan. 7th Mr. V. Warren Low presiding, the sum of £1417 10*s.* from the ordinary funds, and one of £467 10*s.* from the Brickwell fund, were voted for the half-yearly grants. Each widow over 65 receives £37 10*s.*, under 65 £25, and each orphan £25. In addition, a sum of £86 5*s.* was voted to enable orphans, who had reached the age of 16, to continue their education. In December, £630 was distributed as a Christmas present, each widow and orphan receiving £10. At the present time 53 widows and eight orphans are in receipt of grants. The Society grants relief to the widow of a member who is left with a yearly income of £125 or under. A widow who died since the last court came on the funds in 1917, and had received in grants £925, her late husband having paid a life subscription of £31 10*s.* Membership is open to medical men who at the time of their election are residing within a 20-mile radius of Charing Cross. The invested funds amount to over £140,000. Further particulars from the Secretary at the offices of the Society, 11, Chandos-street, London, W.1.

University of London.

The University Court has accepted a bequest of £4000, free of legacy duty, from Miss Mary Ethel Sim Scharlieb, who died in 1926. The purpose of the bequest is the founding of a scholarship in memory of Miss Scharlieb's mother, the late Dame Mary Scharlieb, M.S., to whose life interest the legacy was subject. The scholarship is to be called the Mary Scharlieb Research Scholarship, and the conditions of award will be determined by the university.

Hunterian Society.

A banquet to commemorate the 203rd anniversary of the birth of John Hunter will be held at the May Fair Hotel, Berkeley-street, W., on Thursday, Feb. 19th. The guests will include the Lord Mayor and Lady Mayoress of London.

Association of Public Vaccinators.

The annual general meeting of the Association of Public Vaccinators of England and Wales will be held at 1, Upper Montague-street, London, W.C., on Friday, Jan. 30th, at 3.30 P.M. All public vaccinators are invited.

Food Education Society.

Three lectures on Food and Food Habits and their Connexion with Rheumatism, Cancer, and Other Chronic Diseases, will be given by Dr. Richard Ackerley, at 29, Gordon-square, London, W.C. (entrance in Gordon-street) on Wednesdays, Feb. 11th, 18th, and 25th, at 5.30 P.M.

Post-graduate Course in Belfast.

A series of lectures is in progress at the Royal Victoria Hospital, Belfast, and will continue at 4 P.M. on Wednesday afternoons until June. A second series will begin in the autumn. Medical men who wish to take the course should apply to the honorary secretary of the medical staff of the hospital, who will supply the provisional programme.

Hampstead General and North-West London Hospital: Post-graduate School.

A post-graduate school has been established at this hospital, the membership being composed of practitioners in the north-west of London. The meetings will be held at the hospital every Wednesday afternoon at 4, when debates bearing essentially on general practice will be opened by members of the medical staff of the hospital. The published programme for the session shows that a wide range of subjects has been set down for discussion. The inaugural meeting will take place on Wednesday, Jan. 28th, at 4 P.M. when an address on Maternal Mortality and Morbidity will be given by Mr. Comyns Berkeley. Mr. Clifford Morson has been appointed dean of the school.

National Council for Mental Hygiene.

This Council has arranged a series of lecture-discussions at 11, Chandos-street, London, W., at 5.15 P.M., on Thursdays. The speakers will be: Mrs. Neville-Rolfe on Modern Marriage and Its Problems (Feb. 12th); Prof. J. E. Marcault on the Psychology of Education (19th); Dr. J. R. Rees on the Psychology of Dreams (26th); Dr. W. A. Potts on the Psychology of Punishment (March 5th); Dr. J. Burnett-Rae on the Psychology of Sanity (12th); and Dr. H. Crichton-Miller on the Psychology of Suicide (19th). Tickets are obtainable from the Secretary of the Council, 78, Chandos House, Palmer-street, S.W.1, or at the doors.

Friends of Economy.

A group of public men, drawn from all parties, and using this title, are inaugurating a campaign by a public meeting to be held in the Great Hall, Cannon-street, London, E.C., on Tuesday next, Jan. 27th, at 3 P.M. Mr. E. C. Grenfell, M.P., will take the chair, and the meeting will be addressed by Viscount Grey of Fallodon, Sir Robert Horne, and Sir Ernest Benn. The intention of the campaign is to point out the urgent national need for public economy.

Fellowship of Medicine and Post-Graduate Medical Association.

Particulars of lectures and demonstrations in the coming week will be found in our Medical Diary. From Jan. 27th to Feb. 7th there will be an intensive course in medicine, surgery, and the special departments, at the Prince of Wales's Hospital, daily from 10.30 A.M. to 5.30 P.M. Courses in February will be as follows: gynæcology at the Chelsea Hospital (2nd to 13th); tropical medicine at the Hospital for Tropical Diseases (9th to 28th); and children's diseases at the Queen's Hospital (16th to 28th). Three-months' courses in venereal disease can be arranged (for women only) at the London School of Medicine for Women. The list of courses for 1931, and copies of all syllabuses, may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W.1.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Jan. 26th.—8 P.M., ODONTOLOGY. Paper: Dr. A. A. Osman: The Importance of Sugar in the Diet of the School Child.

TUESDAY.—5 P.M., MEDICINE. Paper: Dr. J. Crighton Bramwell: The Prognosis and Treatment of Heart Disease Complicating Pregnancy.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Discussion: Pathology and Treatment of Hæmopathies, including Leukæmia of Man and Animals. Opener: Dr. H. P. Bayon. Followed by Dr. J. T. Edwards, Dr. J. F. Halls Dally, Sir Thomas Horder, and Dr. J. E. A. Lynham. Other speakers will take part.

THURSDAY.—5.30 P.M., NEUROLOGY: Hughlings Jackson Lecture. Sir Charles Sherrington: Quantitative Management of Contraction for "Lowest-level" Coördination.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Jan. 26th.—8.30 P.M., Dr. E. P. Cumberbatch: Medical and Surgical Uses of Diathermy (Discussion).

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY, Jan. 26th.—8 P.M., Prof. L. C. Martin, D.Sc.: Some Modern Developments in Microscopy (1).

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, Jan. 30th.—8.30 P.M., Colonel E. T. Burke: The Sex Factor in Determining the Course of Syphilis. A Discussion will follow.

ASSOCIATION OF PUBLIC VACCINATORS.

FRIDAY, Jan. 30th.—3.30 P.M. (at 1, Upper Montague-street, W.C.), Annual General Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

MONDAY, Jan. 26th.—5 P.M., Mr. D. H. Patey: Pathological Basis for the Treatment of Varicose Veins and Its Bearing on Problems of Thrombosis.

WEDNESDAY.—5 P.M., Mr. J. Paterson Ross: Treatment of Cerebral Tumours with Radium, with an Account of Experiments made to Study the Effects of Radium upon Cerebral Tissue.

FRIDAY.—5 P.M., Dr. Donald Hunter: Changes in the Bones in Hyperparathyroidism and Hyperthyroidism.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Jan. 27th, to SATURDAY, Jan. 31st.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Mon., 4 P.M., free lecture by Dr. J. W. McNee, on Grave Anæmias. (Early Diagnosis series.)—ST. PETER'S HOSPITAL, Henrietta-street, W.C. Free demonstration in Out-patient Department with Cystoscopies by Mr. Swift Joly on Mon. at 2 P.M.—PRINCESS LOUISE CHILDREN'S HOSPITAL, St. Quintin-avenue, Ladbroke-grove, W. Tues., at 4 P.M., free demonstration by Dr. Jean Smith on Nutritional Disorders. (Cases.)—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N. Intensive Course, two weeks' duration, in medicine and surgery.—Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Jan. 26th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

Special lectures will be delivered on Mon., Tues., Thurs., and Fri., at 4.30 P.M., by Mr. E. Gillespie, Dr. J. Browning Alexander, Dr. F. Howitt, and Dr. L. R. Yealland, respectively

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Agar-street, W.C.

SUNDAY, Jan. 25th.—10.30 A.M., Dr. K. Shirley Smith: Old and New Remedies in Cardiovascular Disease. 11.45 P.M., Mr. Peter Daniel: Diagnosis of Diseases of the Rectum.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Public Health Division), Keppel-street, Gower-street, W.C.

MONDAY, Jan. 26th.—5 P.M., Mr. J. C. Dawes: Public Cleansing. Composition and Storage of House and Trade Refuse.

WEDNESDAY.—5 P.M., Mr. J. C. Dawes: Subject continued.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

WEDNESDAY, Jan. 28th.—5 P.M. (at St. John's Hospital, 49, Leicester-square, W.C.), Dr. Haldin-Davis: The Importance of the Skin.

KING'S COLLEGE, Strand, W.C.

MONDAY, Jan. 26th.—5.30 P.M., Prof. J. Barcroft: Constancy of the Internal Environment (1).

UNIVERSITY COLLEGE MEDICAL SCHOOL, University-street, W.C.

TUESDAY, Jan. 27th.—5.15 P.M., Dr. J. A. Murray: Induction of Cancer by Tar and other Agents.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Jan. 29th.—9 P.M., Mr. John Everidge: Stone in the Urinary Tract.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

WEDNESDAY, Jan. 28th.—4 P.M., Mr. Comyns Berkeley: Maternal Mortality and Morbidity.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Jan. 27th.—5 P.M., Dr. A. M. H. Gray: The Sarcoids.

THURSDAY.—5 P.M., Dr. W. N. Goldsmith: Lichen Planus.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Jan. 28th.—4 P.M., Dr. Edwin Smith: The Practitioner in his Relationship to the Coroner's Court.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

THURSDAY, Jan. 29th.—5 P.M., Mr. H. Burt-White: Investigation and Treatment of Puerperal Pyrexia.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Jan. 30th.—4 P.M., Mr. Nicol Rankin: Differential Diagnosis in a Case Complaining of Nasal Discharge.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Jan. 27th.—3.15 P.M., Mr. N. A. Jory: Lecture.

Appointments

BIRCH, C., L.R.C.P. Lond., M.R.C.S., has been appointed Certifying Surgeon under the Factory and Workshop Acts for Chipping Campden, Gloucester.

DARLING, ISABELLA C., M.B., Ch.B. Glasg., D.P.H., Asst. School Medical Officer, Lanarkshire.

POOL, A., M.B., Ch.B. Liverp., Visiting Psychologist to the Walton Hospital, Liverpool.

THOMAS, J. G. S., L.R.C.P. Lond., M.R.C.S. Eng., Medical Officer to the Post Office, Box, Wiltshire.

Cardiff Royal Infirmary: HAYCRAFT, J. BERRY, M.B. Edin., F.R.C.S. Eng., and JONES, DAVID J., M.B. Lond., F.R.C.S. Eng., Honorary Assistant Surgeons.

London County Council: CRAIG, J. A., M.B., B.Ch. R.U.I., Asst. M.O., Bethnal Green Hospital. ELLIOT-SMITH, A., F.R.C.S. Eng., L.R.C.P. Lond., Asst. M.O., St. Giles' Hospital, Camberwell. LEONARD, F. R., M.B., Ch.B. Otago, Asst. M.O., South-Western Hospital. MCMAHON, E. G., M.B., Ch.B. Syd., Asst. M.O., Queen Mary's Hospital, Sidcup. MCQUEEN, J. G. S., M.B., Ch.B. Edin., Asst. M.O., Colindale Hospital. PARISH, T. N., M.B., B.Chir. Camb., Asst. M.O., St. Giles' Hospital, Camberwell. PRICE, S. R. C., L.R.C.P. Lond., M.R.C.S., Asst. M.O., St. Luke's Hospital, Lowestoft. SWINTON, C. F., M.B., Ch.B. St. And., Deputy Med. Super., Hackney Hospital.

Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Sen. and Jun. H.S.'s. At rate of £150 and £120 respectively.

Bath, Royal United Hospital.—Surgeon to Ear, Nose, and Throat Department.

Birkenhead, County Borough.—Assistant for Municipal Laboratory. £240.

Birmingham, City Babies Hospital, Canwell Hall.—Res. M.O. At rate of £100–£150.

Bolton, Townleys Hospital, Farnworth.—Asst. M.O. £225.

Bradford Children's Hospital.—Hon. Asst. Surg.

Bradford Royal Infirmary.—Two H.S.'s. Each at rate of £150.

Brighton, Steyning Institution.—Res. M.O. and Asst. Administrative County M.O. £600.

Bristol, City and County.—Asst. M.O. for Maternity and Child Welfare. £500.

Bristol Eye Hospital.—Res. H.S. £150.

Bristol Royal Infirmary.—H.P.'s and H.S.'s to Special Depts. All at rate of £60.

Cancer Hospital, Fulham-road, S.W.—Physician.

Canterbury, Kent and Canterbury Hospital.—H.S. At rate of £125.

Cardiff Royal Infirmary.—H.P.'s and H.S.'s to Special Depts. All at rate of £50.

Charing Cross Hospital, W.C.—Asst. Obstetric Physician.

Chester Royal Infirmary.—H.S. to Ear, Nose, and Throat Dept. £150.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

Eastbourne, Ear, Nose and Throat Hospital.—Hon. Surgeon.

Evelina Hospital for Children, Southwark, S.E.—H.P., Cas. and Out-patient Officer. Also H.S. All at rate of £120.

French Hospital and Dispensary, 172, Shaftesbury-avenue, W.C.—Jun. Res. M.O. £100.

Fulham School Medical Treatment Centre, Bagleys-lane, Fulham, S.W.—Surg. to Eye Dept., £200; Surg. to Ear, Nose, and Throat Dept., £120; Anæsthetist to ditto, £75; Radiologist, Ringworm Dept., £40; Anæsthetist to Dental Dept., £75; Surg. Minor Ailments Dept., £66.

Glasgow University.—Harry Stewart Hutchison Prize. £50.

Great Yarmouth General Hospital.—Sen. H.S. £150.

Harrogate Infirmary.—Jun. H.S. At rate of £125.

Hertford County Hospital.—H.P. £150.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—H.P. At rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Surg. Reg. £300. Also Refraction Asst. for Ophthalmic Dept. 1 gn. each attendance.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—Asst. Radiologist.

Ilford, King George Hospital.—Hon. Gynæcological Surgeon.

Inverness, Royal Northern Infirmary.—H.S. At rate of £105.

Leicester, City Isolation Hospital and Sanatorium, Groby-road.—Jun. Asst. M.O. £300.

Leicester City Mental Hospital, Humberstone.—Second Asst. M.O. £350.

Leigh Infirmary, Lancashire.—Res. H.S. At rate of £200.

Liverpool County Borough Local Educational Authority.—Jun. Asst. School M.O.'s. Each £500.

London Female Lock Hospital, 283, Harrow-road, W.—Surg. Reg. £100.

Manchester, Ancoats Hospital.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.

Manchester, Royal Children's Hospital, Pendlebury.—Hon. Ophth. Surg.

Margate Royal Sea Bathing Hospital, &c.—H.S. At rate of £200.

Maudsley Hospital, Denmark Hill, S.E.—Asst. M.O. (full time). £435. Also Asst. M.O. (part time). £300.

Middlesbrough Education Committee.—Sen. Asst. School M.O. £500.

Minehead and West Somerset Hospital, Minehead.—Res. H.S. At rate of £150.

Newcastle-on-Tyne, Royal Victoria Infirmary.—Six Jun. Surg. Registrars. Each £150. Also Sen. and Two Jun. M.O.'s. At rate of £200 and £100 respectively.

Nottingham and Midland Eye Infirmary.—Res. H.S. £200.

Oldham County Borough.—Asst. M.O.H. and Clin. Tuber. O. £750.

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.

Oxford City.—Temporary Asst. M.O.H. £500.

Pontefract General Infirmary.—R.M.O. £200–£300.

Poole, Dorset, Cornelia and East Dorset Hospital.—H.S. At rate of £150.

Portsmouth, St. Mary's Hospital, St. Mary's Institution, &c.—Third Asst. Res. M.O. £250.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, Kensington, W.—Hon. Asst. Dental Surgeon.

Queen Mary's Hospital for the East End, Stratford, E.—Hon. Dental Surgeon.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Rochester, St. Bartholomew's Hospital.—Third Res. M.O. At rate of £175.

Royal Northern Hospital, Holloway, N.—Asst. Surg. O. £75. Also Hon. Surg.

St. Bartholomew's Hospital, E.C.—Surgeon.

St. Mark's Hospital for Cancer, City-road, E.C.—Res. Surg. O. £150.

Salisbury General Infirmary.—H.S. £150.

Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Res. Anæsthetist. £80–£100.

Sheffield Royal Infirmary.—H.S. At rate of £80.

Simla, Indian Research Fund Association.—Entomologist. Rs.1500 per mensem.

South London Hospital for Women, South Side, S.W.—Anæsthetist. 10*s.* 6*d.* each attendance.

South Shields, Harton Hospital.—Two H.S.'s. Each £150.

Swindon and North Wilts Victoria Hospital, Swindon.—M.O. £125.

Uxbridge, Hillingdon Hospital.—Dispenser. £250.

West Ham County Borough.—Jun. Asst. M.O. £500.

Wigan, Royal Infirmary.—Third H.S. At rate of £150.

Wolverhampton, Royal Hospital.—Two H.S.'s. Each at rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Great Haseley (Oxon.), Langport (Somerset)), and at Towyn (Merioneth).

Births, Marriages, and Deaths

BIRTHS.

ANDERSON.—On Jan. 12th, at Ribblesdale House, Hornsey, N., the wife of Roy Shirras Anderson, M.R.C.S., L.R.C.P., of a daughter, prematurely.

MARRIAGES.

HARDY—MCNALTY.—On Jan. 14th, at St. Peter's, Eaton-square, Ernest A. Hardy, M.R.C.S., L.R.C.P., L.D.S., to Frances Joy St. George McNalty, daughter of Brigadier-General A. G. P. McNalty.

DEATHS.

BENTHAM.—On Jan. 19th, at Beaufort-street, S.W., Dr. Ethel Bentham, M.P., aged 70 years.

CAMERON.—On Jan. 11th, at Beverley, James Cameron, M.D. Lond. and Edin., M.R.C.P., aged 65 years.

DOWSE.—On Jan. 16th, at Suva, Littleham Cross, Exmouth, Thomas Stretch Dowse, M.D., aged 94 years.

LLOYD.—On Jan. 16th, at his residence, Ashlea, Abergavenny, suddenly, Thomas Edward Lloyd, F.R.C.S., M.D., M.R.C.S., L.R.C.P.

MORGAN.—On Jan. 15th, at Letchmore Lodge, Elstree, Harry de Riemer Morgan, M.A., M.R.C.S., L.R.C.P., D.P.H.

PALMER.—On Jan. 15th, at Holford, Longfellow-road, Worthing, Frederick John Morton Palmer, M.B. Lond., F.S.A., aged 7[illegible].

TURNER.—On Jan. 17th, at Guy's Hospital, after an operation, Frederick Meadows Turner, M.D., Medical Superintendent, South-Eastern Hospital; aged 64.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

ALCOHOL AND THE MOTORIST.

AT a meeting of the Society for the Study of Inebriety on Jan. 13th the chair was taken by Mr. W. McAdam Eccles, and Dr. Courtenay Weeks read a paper on Alcoholic Indulgence in Relation to Motor Transport. Whatever might be said of moderate drinking at other times, he said, alcoholic indulgence immediately before or during motor driving was a positive menace to society. The pedestrian also had a definite personal responsibility, for indulgence on his part might render him a danger not only to himself but also to others. During the year 1929 there had been 111,432 accidents—4968 of them fatal—caused by mechanically propelled vehicles. The loss of life and limb was serious enough, but these accidents also threw a strain on the financial and personal resources of voluntary hospitals; the estimated cost of accidents in the U.S.A. was 850 million dollars p.a. In addition, there were the accidents due to aviation. During 1929 there had been 1230 convictions for being drunk in charge of a car, and a large number of charges which had not resulted in conviction. All classes had been involved in these cases, which had revealed an astounding universal ignorance of the essential effect of alcohol upon the human organism. The causes of road accidents had been considered in three reliable calculations: the report of the Royal Commission on Transport; the investigation of the Roads Department, 1928–29; and returns from coroners. The first referred to 723 inquests, and ascribed 39 per cent. of the deaths to causes presumably under the control of the driver, 43 per cent. to pedestrians, and the remainder to the vehicle, road, or other non-human agency. The principal faults were excess speed (15 per cent.), inattention and lack of judgment (6 per cent.), lack of caution at cross-roads (5·8 per cent.), failing to keep to near side (3 per cent.), and cutting in (4 per cent.). Thus 80 per cent. of these accidents were due to inefficient control by driver or pedestrian. In the second investigation the driver had been held responsible in 50 per cent. of accidents, and in the third investigation 85 per cent. had been ascribed to errors of judgment on the part of motorist or pedestrian. From these figures it emerged that at least 2009 deaths in 1929 were due to negligence on the part of drivers, and 2403 to negligence of pedestrians. Intoxication, however, had only been cited in 0·7 per cent. The Air Ministry report stated that about 70 per cent. of the air accidents were due solely to faulty pilotage.

There was a large presumption that published figures of drunkenness only represented a fraction of the whole. There was need for education of public and police. Solicitors, barristers, and doctors, called for the defence, frequently said that their client could not be drunk, while admitting that he had taken considerable quantities of alcohol, such as six beers and a whisky, or seven mixed drinks in six hours. One doctor had said that he would "certify a man as drunk if he was absolutely paralytic." While such statements were made in the courts of law, it was justifiable to assume that a great number of people on the road were definitely and dangerously under the influence of alcohol.

THE PERSONAL FACTOR.

It was difficult to analyse personal errors of judgment or to express exactly what was meant by negligence. Certain types, however, constituted a definite danger without alcohol, and with it a positive menace. These were the reckless road-hog, who showed want of thought, consideration, and courtesy, as well as lack of judgment; the careless road-hog, who took out a car in an improper condition and never gained proper control either of himself or of his car; the driver with no road sense, though quite well-meaning; the emotionally unstable, who went to pieces in emergency; and those suffering from physical defects. Some of these descriptions might also be applied to pedestrians.

A New York calculation had shown that chance played a very small part in accidents. Certain drivers were especially liable to mishap. Alcohol was well known to interfere with accuracy of judgment and neuromuscular coördination. Miles's experiments, among others, had shown this ("Alcohol: Its Action on the Human Organism"). A person under even a small dose of alcohol was one whose mind lacked temporarily its normal factor of judgment and conspicuous elements of self-control. Moreover, the taking of alcohol during or before prolonged or severe exposure to cold was dangerous. A recent correspondence in the *Times* had shown how little this fact was appreciated by the public, including the Air Ministry.

An important part of the effect of alcohol in relation to driving was the lengthening of the reaction time and the deceptive influence under which the subject thought he was performing his task much better than usual, whereas he was conspicuously slower and less efficient. Car-driving demanded instantaneous response through a complex system of reflexes. The Berlin police had issued a warning that motor drivers ought to refrain completely from all alcoholic beverages, as the smallest quantities were injurious for them. A number of continental aviation organisations required abstinence during and before flight, and the majority of private and public motor companies in this country had a rule or understanding that no alcohol should be taken by drivers on duty.

DISCUSSION.

In reply to a question by Lady Horsley, Dr. Weeks said that by indulgence he meant the ingestion of any alcohol at all. The Chairman quoted from the pamphlet issued by the British Medical Association, and remarked that the offence of being drunk had been extended to cover being under the influence of drugs. Many prosecutions had been reported, and very many more must have occurred. Dr. Coram James asked whether the experiments quoted by Dr. Weeks had been made on abstainers or moderate drinkers. Dr. Weeks replied that Miles's experiments had been done on moderate drinkers. Dr. T. Rushbrooke mentioned that in a recent case the defence put forward had been that the accused had been taking cough mixture. He was glad to see that the offence of being under the influence of drugs had been included in the new Act. Dr. Weeks replied that a number of cough mixtures contained anything from 28 to 65 per cent. of absolute alcohol. Dr. H. M. Vernon remarked on the necessity for educating the public, and said that they did not understand what a long time it took to get rid of even a moderate amount of alcohol from the body. A pint of beer took three hours to remove, and even next morning a moderate drinker might have an appreciable amount of alcohol in his body. Five or six hours was not sufficient to eliminate more than a quart of beer. It was best to observe the general rule that no drink should be taken before the day's work was over. Dr. W. M. Feldman asked if Dr. Weeks knew of any experiments on the effects of tobacco on the control of the nervous system or the reaction time, or on the combined effect of alcohol and tobacco. Dr. Weeks said that he was unable to give any authority, but thought it possible that smoking might in many cases tend to increase the reaction time.

THE CHORION AND TROPHOBLAST.

THE fate of the zona pellucida of the impregnated ovum is doubtful, at least in the human subject. The doubt, of course, is due to the fact that it disappears during stages which are unknown at present. Dr. F. A. Stahl, in a monograph published a few months in looking, with another person or thing. It means a connexion. When we see, our eyes are functioning rightly only if we are socially interested, and we find among many children and grown-ups that they do not coöperate with their eyes, they do not look straight, they are not interested. We speak of a "hang-dog" or a "vacant" look, and we know the queer look of an insane person, interested only in himself. If we judge rightly, we shall find the degree of coöperation from how a person is looking. We act in a sympathetic way, and we do not like a certain look if we do not find social interest in it. We know the "dirty" look, the look of the criminal, and so on, and we judge, without knowing it, the degree of coöperation. We do not mean "looking" merely in the physiological sense of collecting pictures and leading them to the brain. What interests the psychologist is the degree of coöperation, and we understand the great importance of it because it means the whole understanding of a child if he is looking in a coöperative and interested way.

The same results will be found if we investigate in regard to listening and you can understand the little progress made by a child or by a grown-up if he does not listen interestedly, if he is not attentive, and does not connect himself in hearing sounds and words and so on, and we know how important it is for the development of one of the most important functions of the human mind—that of speaking.

Coöperation: In Social Life.

What does it mean to connect one person with another? It is the basic element of our speech function, and only such persons can speak rightly who have understood how to connect with others and to express themselves in such a way as they would like everybody to connect in speech, to express themselves in a way that others can understand, and so on. We see the development of all our sense organs can happen only if the child is socially interested; his goal is to be connected with others, and to coöperate and contribute. If he feels a part of the whole, if he feels at home upon this poor earth crust, if he wants to develop, to help to contribute, and to coöperate, then he can develop his functions rightly. What does "rightly" mean? We measure all this in regard to the welfare of the whole of mankind. We would never call anything *worth while* if it were not worth while for the whole of mankind. Normal, right, true, and so on, are things we instinctively say when it is in the direction of the welfare of mankind. For this everybody has to coöperate and to contribute. These are the primitive functions of human beings and they cannot be rightly developed if such a person is not interested in the whole and does not feel a part of the whole. In the same way, we find all the characteristics are developed in the right way only if there is a certain degree of social interest.

What do we call characteristics? These are social relations. To be *good* means to be good towards others, and to be *bad* means to be bad towards others. To be interested in Art we need a social interest; to be lazy means *not to* contribute or coöperate; just as to be industrious means the contrary, and so on. You cannot find one characteristic which does not mean a social relation which can be measured. "Courageous," for instance, is a quality that exists only in regard to the welfare of mankind. We do not find courage without social interest, and when we speak of a wrong development we mean that we do not meet with ability to coöperate. We cannot speak about morals and ethics without making it obvious that we mean coöperation and interest in others. Wherever we find that man is culturally at a certain stage, he has to grasp the ideal of coöperation. We know the meaning of life that we can develop ourselves only if we coöperate and are trained in contribution. On this point we can also answer the question we hear very often: Do we develop the individual for himself, or for mankind? Now you you *cannot* develop the individual without devel him for the welfare of mankind, and if a person develops his ability of coöperation, he develops his listening and speaking and right understanding. Our understanding, our common sense, our logic, can be strengthened and developed only in a social environment. It is based on these senses and functions of listening, looking, speaking, and so on, and our understanding is not in a proper condition unless we would understand in a way that can be controlled by the whole of mankind and as we would everybody to understand.

That is common sense. Understanding can developed only if a person is socially interested. say that failures have no common sense. They ar not stupid or feeble-minded; they conclude *rea* but not in the way of social interest. Even in regard to our æsthetic feelings we clearly judge Art by whether it is in the way of the meaning and welfare of mankind. Nobody has ever called something beautiful which was not in the line of development and improvement of mankind. And especially anything which we call beautiful in regard to human beings looks towards the future, it carries the idea of children, the tendencies of what we want mankind later on to be, and so on.

So we see our functions and feelings are developed rightly if a person is concerned about the whole of mankind and feels the need of *coöperation*. We know that the child starts with a feeling of inferiority, he feels little and down and he strives to overcome it. The only right way to overcome this feeling of inferiority, which involves everybody, is to feel *wo while*, and he cannot do so if he does not coöperate. Therefore he cannot get rid of this feeling of inferiority.

Happiness and the "Pleasure Principle."

And here is a point that I want to mention shortly. It is often said that human beings are governed by the "pleasure principle." Many psychologists and psychiatrists, however, are sure that this is not true. Human beings strive for the *happiness* of others; this is the true pleasure of the socially interested person. The "pleasure principle" is the striving of a person who is only interested in himself and not in others.

Perhaps now we feel more quiet and sure that we are on the right way. There must be an underlying idea in our life, a *meaning*, a metaphysical background of our life, which means coöperation. You will see that mankind always keeps instinctively to this viewpoint and you do not find any religious system which does not say "Coöperate; love thy neighbour." This is generally a religious explanation and if we can find a scientific explanation I believe it will help for the improvement and benefit of mankind. Perhaps we are not yet wholly sure; we want to be more sceptical, and so we ask another question. If it be really so, that the meaning of life is coöperation, then must not all our pro be problems which can be solved only if we coöperate? This is another interesting result of Individual Psychology, so that we can insist that human beings never meet anything but social problems in life which demand a right preparation for coöperation.

The Family Relation.

I spoke before about the meeting of the new-born child and the mother. Now there are other problems, small and great, in the life of the human being. Another child comes into the family and how this child behaves to the other proves his ability in coöperation. We are scared to see how many children grow up without this ability to coöperate if a new child comes into the family; how they resist and want to exclude the other child; they feel hurt and timid and do not want to coöperate, and so on. Later in life, to be sure, the child enters the kindergarten, nursery school, or public school, and always he meets a social problem. He meets other children there and the teachers, and discussions take place which are to lead towards his later profession and occupation, whether he is to be useful in the division of labour for the sake of the whole of mankind. All these problems therefore are like examinations. We can see how a child behaves in his little problems: if he wants to join other children, if he has friends and comrades, if he is interested in his work, if he can play with other children—in all these ways we find how far he is prepared in coöperation.

We are always looking for reasons why so many children, and later on grown-ups, are not rightly prepared, but this I will describe later. After the school he enters the social life, gains friendship, and a family, and he has to meet and to compare with other persons. In all these relations we find people behaving differently and if they behave rightly or, as we say, normally and intelligently, they are interested in other persons, they can coöperate. This is the social problem we meet in life. There is the problem of occupation. We have to be useful and to coöperate in the division of labour, and not believe that we are working for money. We really can earn money only if we coöperate. Otherwise we have failure in life—crime, for instance. We are paid, then, because we coöperate. The problems of society, friendship, comradeship, problems of occupation, are bound up to a certain degree. There are other problems, such as the problem of love.

The Sex Relation.

Because we are living in two sexes there must be a certain coöperation between them. In this matter mankind has felt, and feels now, that there is not the right coöperation because we are not skilled and trained and prepared. We read books which mostly are stories of unhappy marriages and love affairs, and we are impressed with the great difficulties. We are not prepared to coöperate rightly with the other person, and the problem of love demands that we should be interested in the other person more than in ourselves. This problem must be solved, and we understand that there must be such an underlying ruling idea in our lives that the meaning of life is to coöperate. We have no other problems in life.

I would be very thankful if somebody would mention a problem which does not demand social interest. We are in a trap, we cannot get out of it, and there must be a meaning of this trap. Its meaning is to coöperate. But perhaps we still want to doubt. If this is not right, it must appear in what we call the failures of life. What are failures in life? We can mention some types of failure—problem children, neurotic persons, psychotic persons, criminals, prostitutes, suicides, drunkards and morphinists, sexually perverted persons, and perhaps you know more.

The Failures.

Now in all these cases, if we are right, we shall expect to find a lack of ability to coöperate and really we do find it. We call them failures because they do not coöperate. The problem child does not contribute and therefore we are not contented with him and we want to change him so that he will coöperate. Now again we meet the same problem and the same meaning of life in the problem child and in neurotic persons. They do not coöperate; they want others to coöperate. The members of the family and the doctor should coöperate, and they will indulge, indulging and exploiting the coöperation of others, recognising the idea of coöperation—for the others.

That psychotic persons will not coöperate because they are not socially interested in others is so obvious that I do not need to speak about it. That the criminal will not coöperate is also very obvious. On the contrary, he wants to avoid coöperation and that is an easier way because he has not the characteristics of a socially interested person, which are courage and optimism, self-confidence, patience, and so on, not to be afraid of defeat, facing the difficulties of life. The criminal has not these. He is not prepared, therefore. To touch one of the most important questions of our time, I would say he is not guilty. He cannot pay what is demanded. We have to prepare him if we want to do something in regard to crime. On this point I want to say a little word in regard to determinism and indeterminism. If the child is built up for four or five years his style is fixed. This child—or later this grown-up person—can act only along the lines of that style and can change it only if he has understood the lack and mistake in his style. He has not the right meaning of life. The problem child has a meaning of life, that others must submit "I have to rule." That is the meaning of life for the problem child: "I must have my own way."

The neurotic person has a meaning of life: "the *others* have to serve and contribute." The criminal has a meaning of life: to have an easier way of earning his living, for instance; not the way of coöperation. The drunkard has a meaning of life: to escape from time to time from the problems of life where he should coöperate, always because of the fear of defeat, and because he is not sure of success. And you can see, if all the failures in life can be made more self-confident, more courageous, more interested in coöperation, they will be changed. You find the same among sexually perverted persons. They reverse the meaning of life, mostly culminating in this idea—not to be interested in procreation, the welfare of mankind, and so on.

So we see the failure has always a mistaken meaning of life: not to coöperate. Among these failures we see some interesting characteristics which may lead our understanding further. For instance, all these failures are sensitive, high-tempered, affective. They are angry, they are timid, they have all the emotions very visible, very obvious, and we can understand they are not adapted; they do not feel a part of life and of the whole. They feel always irritated and are always irritable, and we can understand it, because they are not living in this world, which means to coöperate; they have another idea of life, another meaning, and therefore they are sensitive.

They are always impatient because they are sure that their success is in danger. They do not feel strong and courageous in life. This is what we find among problem children, neurotic persons, criminals, suicides, all persons who do not find a meaning in life. They will even write in a last letter: "Life has no *meaning*, and therefore I kill myself." *They are timid.* Even criminals, you see, are cowards. We cannot be fooled by them because we have seen them escaping the social problems of life, occupation, and so on. We are sure they are not courageous, and you can see in the very structure of their crimes that they are cowards. They seek isolation, darkness, they have weapons against unarmed men, they surprise another person, and so on. They are in a majority when they attack, and so we cannot agree that they are as courageous as is sometimes believed. Theirs is always the attitude of the coward. Their characteristics agree with what we have explained; *the mistaken meaning of life.* They are also pessimistic. They do not look to the future, are not interested in the future of mankind, and are always looking for *pleasure* and not for *happiness*. So again in the failures; we find that they have failed in finding the right meaning of life which means coöperation.

Heredity: Environment: Education.

Now to another question: Whence comes this ability of coöperation? Is it an inherited instinct? Is it inborn? *That* is not possible, because, especially in regard to characteristics, we see how they must be *worked out* and *accomplished*, and how they always involve social relations which do not exist before the child is born. We have seen that we can prepare persons and correct failures and make persons more socially interested if they are convinced, as we seem to be convinced, that coöperation is the right meaning of life. Therefore it cannot be an inherited *entity*. That there must be an inherited *ability* we cannot question, because we cannot develop anything for which we have not an inherited ability. This seems to me to be not great science but commonplace.

And now perhaps also environment. Environment does not matter in this regard. We try to interfere in the right way and impress the child in such a way that he becomes trained in social adjustment and coöperation, but we are not wholly sure if our interferences really work rightly. We must look beyond this argument and adjust our interference and coöperation. We must look for the results and we must interfere in the results. And on this point we say that it can only be done by education: education in the broadest sense. Therefore such an explanation as this of to-day means putting back education on its right throne again, against all other views, against the views of heredity and environment. We are responsible, we educators. And we say that ability to coöperate *can be and must be trained.* It is as with a subject like history or geography. If a person is not *trained* in geography, and would solve a geographical question, you will see that he fails.

There is another aspect. As long as a person is not tested in regard to his ability to coöperate, for example through being in a favourable situation where he is not confronted, you cannot be absolutely sure in regard to his degree of coöperation. On this point we begin to understand why, for instance, in hard times people reach the limit of their ability to coöperate. Suicides increase, crime increases, the neuroses and psychoses increase, because the ability of coöperation stops at this point; it does not go further. If a person is tempted too much, so far as we can see in our time there are many persons who, if they were tempted, would show that socially they were rightly prepared. Therefore we say always that the failures reach a certain point which is the crucial point. It is their test examination. At this point it appears that their preparation for social adjustment is not rightly accomplished.

I have touched on the problem of training. T mother begins, the father has to continue, and th other children and circumstances from You can see how prejudices may hinder the development of social adjustment, and how poverty, misery, sufferings, imperfect organs, and sickness, may make child more interested in his own person than in others. The greatest part of failures we find springing pampered *dependent* children because these are more interested in themselves. They want exploit others, to appropriate the others. want to utilise the coöperation of others, and they do not feel strong enough themselves in facing certain social problem. When they have to face problem it appears in their whole behaviour attitude that they do not feel prepared. They not feel able—and so they express it—to solve problem. I have called this the *inferiority plex*, and you find many failures have failure to solve the social problems. We now why they do not feel able; because they not trained in coöperation, they have not social interest. Now the child's inferiority may be like a stimulus. But the dependent do not try to compensate this feeling by feeling while. They have *excluded* this way of coöp and therefore they are looking for a goal of superiority where there is a feeling of being than others; for instance, the urge to others, to kill others, to deprive others, to others unhappy, and torture others, to others, to resent them, and so on. You find it in the causes of failure I have mentioned, that they striving for a superiority, a personal which is not useful for the whole of mankind. this goal of superiority they do not find in the p of coöperation. And so, may we not say that on points we can prove that the meaning of life must for the greatest part coöperation? And now have to make it living.

LANCASTER INFIRMARY.—Lady Ashton, widow Lord Ashton, who laid the foundation-stone of this in 1896, recently opened extensions, including a ward, a children's ward, and additions to the nurses' which have cost £25,000. A war-time building, erected munition workers, is shortly to give place to wards, and the entire scheme will cost £75,000.

HEREFORDSHIRE ISOLATION HOSPITALS.—After comprehensive survey of the isolation hospital dation in Herefordshire, the county medical Dr. Peter Lowe, reports that the present system small fever hospitals run by various authorities, others contract with neighbouring bodies, is and recommends its supersession by the erection of central hospital managed by a joint hospital board. hospital belonging to the borough of Leominster is condemned. It is a small wood and iron building, in of painting and repairs; the water-supply is from a used by neighbours, and there is neither a telephone, mortuary, nor a disinfection room—an old cab is a disinfecting chamber. Hereford city isolation is of wood and corrugated iron; the scarlet fever antiquated and decayed, and no system of lighting installed. The ambulance is a horse-drawn cab, in only children can be placed in a recumbent position. Leominster and Wigmore isolation hospital also has ancient cab as ambulance, but there is neither horse harness. There is no indoor sanitation, no warming, the lighting is by oil lamps. The report and rec have not yet been considered by the county council.

TREATMENT OF CANCER OF THE BREAST.

A CLINICAL REVIEW OF 150 CASES.[*]

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Comparatively few cases of mammary cancer re treated in this country even with prophylactic ray therapy, or with radium for recurrences, and therefore felt that a review of a series of 150 cases, a very large percentage of which I have used ost-operative radiotherapy, might be of value. hope to prove that the results of surgical operation this disease could be improved if all cases were eated with adequate and early post-operative diotherapy.

The low operative mortality—about 1 per cent.—d the excellent immediate results—or very high ree-year survival rate—probably account for the that treatment of cancer of the breast has remained long exclusively surgical. The high operative ortality and poor end-results in cancer of the rvix uteri, on the other hand, have caused a growing terest in radiological methods. The operation for ncer of the breast has reached probably its final age of development, while radiotherapy is in its fancy and is dependent on the research of the ysicist and improvements in apparatus, necessitating change of technique and plant every few years. evertheless, prophylactic post-operative X rays, d X rays or radium or both for recurrences and operable cases are now advocated by many authoties, notably Sampson Handley[1] in England; arnekros, Seitz, Wintz,[2] Doederlein, Buchholz[3] and olfelder[15] in Germany; Béclère and Regaud[4] in ance; and in America Burton Lee[5] of the New ork Memorial, Pfahler and Parry,[6] of Philadelphia, d. Harrington[7] of the Mayo Clinic. I have myself sited clinics in Frankfurt, Erlangen, Freiburg, rlin, Dresden, Munich, Paris, New York, Baltimore, iladelphia, and Rochester—most of them more an once—in order to follow up the changes and odifications in technique.

Radical Surgical Treatment.

Since, according to most authorities, untreated ses survive for two and a half to three and a half ars, the many hundreds of statistics given on a three-ar survival basis must surely be unsatisfactory. evertheless, the consensus of opinion is at present in vour of a preliminary radical operation in all erable cases. Lane-Claypon's[8] figures show the periority of a complete over an incomplete operation. ly 23 of her 2006 cases had had post-operative radioerapy, but this superiority is more marked in the ses treated by surgery alone. Even more than the nature of the operation, the results depend the stage the disease has reached, and this probably counts for the apparently excellent results sometimes tained in early cases by incomplete operation. riously enough, as has been pointed out by Pfahler d others, the kind of operation and the stage of the sease are more important factors than the type of owth.

The stages of development of the modern operation e interesting and have an indirect influence on the chnique of post-operative radiotherapy. Halsted,[9] of Baltimore, in 1894, first advocated the removal of the axillary glands and the pectoral muscles, and later also of the supraclavicular glands. He made a point of the necessity of removing these in one piece, making a very wide removal of skin and leaving the wound to heal by granulation. Stiles, of Edinburgh, pointed out that both Halsted and Gross removed an unnecessary amount of skin; but advocated a wider removal of the outlying breast lobules and circummammary fat, to ensure ablation of the cancerous lymphatics so frequently found throughout the organ. In this he won the support of Prof. Watson Cheyne, whose first paper on the subject was published in 1894. Rodman,[10] of Philadelphia, in 1908 introduced a further modification in technique, but to Sampson Handley[1] we owe perhaps our greatest debt for his operation founded upon epoch-making pathological researches.

Handley asserts that cancer spreads in the parietal tissues by permeating the lymphatic system like an invisible annular ringworm. The growing edge extends like a ripple in a wider and wider circle, within the circumference of which healing processes take place, so that the area of permeation at any one time is not a disc but a ring. The spread of cancer in the parietal tissues is, in fact, as truly a serpiginous process as the most typical tertiary syphilide. The ideal surgical operation, therefore, is one which, even in the early case, provides for the wide removal of the skin of the affected breast, the still wider removal of the deep fascia, the removal of the pectoral muscle or muscles, the axillary glands, and the fat en masse. Any exploratory or two-stage operation is to be avoided, for incision into the growth has been shown by Gye and others to be the surest means of disseminating carcinomatous cells. If an exploration has been made it should be followed immediately by the complete operation. Carter-Braine, and Massie report 722 cases of carcinoma with 80 per cent. three-year survival-rate without recurrence, provided that operation follows clinical or biopsy diagnosis immediately. If there is an interval between exploratory and radical operation the survival-rate is reduced by 13 per cent.

Another point of interest is that the lymph glands, though ultimately they may become infective foci, for a long time delay the progress of cancer cells. They act as mechanical filters, and there is evidence that, for a time at least, they exert a destructive action on the cancer cells which reach them, and only succumb to the invasion after a prolonged resistance. (Incidentally this is the chief reason why the supraclavicular glands are not irradiated unless they are already invaded by cancer, and why the practice of their routine removal has been abandoned.)

The peculiarities of metastatic distribution are in themselves sufficient to show that cancer cells which gain access to the blood are usually reduced to impotence. The opposite axillary glands, the opposite breast, or the inguinal glands are never found cancerous early in the case, as should occasionally happen if cancer cells can reach them embolically from other lymphatic areas. Some cases show invasion of the axillary glands on the side opposite the primary growth, probably indicating that permeation has extended well over the middle line and that cancer cells have thus penetrated to the trunk lymphatics which drain into the opposite axillary glands.

Case Records.

To obtain an accurate record of my cases I devised some years ago a special protocol which I have found useful, both for accurate note-taking and the necessary regular follow-up. I find that my youngest patient was 26 and my oldest 81½ years—64 per cent. of all patients being between the ages of 40 and 60. The average duration of symptoms before the patients applied for any form of treatment was 11 months, which indicates the actual delay in seeking advice and gives some idea of the advanced stage of the disease. The symptoms and physical signs most often complained of were a lump in the breast (80 per cent.), much less often a feeling of discomfort, retraction, or discharge from the nipple, ulceration, or a stinging sensation. In only 3 per cent. was there a history of injury. This is apparently a low figure, as some observers record a history of injury in some 14 per cent.

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[*] Based on a paper read before the London Association of the dical Women's Federation.

I have treated 120 cases with post-operative X rays or radium or both, 21 cases with surgery only, and 9 cases with radiotherapy only. I have included all cases of breast cancer I have treated: 86 cases in which I performed radical operation myself, as well as 31 cases which have been operated upon by other surgeons and referred to me for radiotherapy, and 24 cases in which incomplete or palliative operation was performed. (Table I.)

TABLE I.—*150 Consecutive Cases of Cancer of the Breast.*

(*a*) *Grouped according to the treatment each patient received.*

Surgery.	
Radical amputation	19
Simple amputation (palliative)	2
	21
Surgery and Radiotherapy.	
Radical amputation and intensive X ray therapy	83
Radical amputation and radium	3
Radical amputation and intensive X ray therapy and radium	12
Simple amputation and intensive X ray therapy	16
Simple amputation and radium	3
Simple amputation and intensive X ray therapy and radium	3
	120
Radiotherapy.	
Intensive X rays only	5
Radium only	2
Intensive X ray therapy and radium	2
	9

(*b*) *Grouped according to the various procedures in treatment.*

Radical amputation of breast	117
Incomplete operation (including palliative operation)	24
Pre- and post-operative intensive X ray therapy	120
Post-operative intensive X ray therapy in late recurrent cases	52
Intensive X ray therapy only	5
Radium only	2
Intensive X ray therapy and radium	2

SURGICAL TREATMENT.

In my own series of cases I have adhered to a modification of Halsted's technique. I make an elliptical incision, including the nipple and a wide margin of skin outside the area of the growth itself; I remove the sternal portion of the pectoralis major, cutting through the humeral end of the muscle as close to the bone as possible. In some cases I remove the pectoralis minor as well and in every case a very wide area of fascia, well over the mid-sternal line, to the clavicle above to the latissimus dorsi behind, and to the rectal sheath below. I then call for a high stool and sit comfortably down, and dissect out the axillary glands and fat, leaving as clean an axillary vein, artery, and nerves as possible.

I use several pints of warm 1–4000 corrosive sublimate to wash over the raw area, having kept the flaps the whole time as clean and protected as I could with thick warm wet mattress swabs. I put in a biggish drainage-tube through the outer up into the axilla, and unite the flaps with 8 or through-and-through silkworm gut sutures, protect by thin rubber tubing, with Michel's clips betw For the first week I encourage the patient to ke her arm out at right angles on a pillow, using th hand as much as she comfortably can. On the ten or twelfth day I let her sit up if she is inclined, but do not hurry her out of the nursing home or hospital she remains until the nineteenth or twentieth day.

The results of surgical operation are seen in Table I They are quite excellent as regards primary operat mortality and three-year cures—but if one is enough to follow up the cases for 10 to 15 or m years they are found to leave much to be desire Sampson Handley says that during the last 14 more years every case of breast cancer upon which has operated has received a prophylactic dose X rays, and that in his series of cases recurrence the skin has been almost absent, three of the cases in which it took place occurring among the percentage of cases which had escaped the prophylactic course of X rays; this has also been own experience.

SURGERY AND DEEP X RAY THERAPY.

In my own series of treated cases of cance the breast I find that I have used pre- or operative radiotherapy in some 120 out of 150 It is difficult to arrive at a correct assessment its value, because it is only in a comparatively number of cases that I have been able to give can be called really adequate X ray tre namely, at least one pre-operative treatment 14 before, and post-operative prophylactic treat starting two to four weeks after operation. Table II. I have compared my results with those surgery only, as well as with untreated cases and survival in healthy subjects, and in Table III. I h shown other people's results.

Pfahler and Parry,[6] in a recent statistical study radiation therapy in 939 cases of cancer of the bre point out that the average time intervening betw operation and X ray treatment in 646 cases unfortunately as long as 15 months. My own av interval was also unfortunately 11 months. I believe with Soiland[11] that patients should be g pre-operative as well as post-operative treat and that the latter should be started as soon as or three weeks after operation. Pre-operative tion is based on the theory that such tr devitalises the cancer cells, and therefore makes less liable to grow if re-implantation or tran occurs during the operation. This devitalisation cancer cells is a recognised effect of irradiation, clinically and experimentally. Murphy, at Rockefeller Institute, and others have details of their research into this subject. Gye shown that incision is one of the surest means disseminating carcinomatous cells, and such a of therapy, it is assumed, will reduce mitosis of malignant cells sufficiently to render them innocu In my own series I was able to give adequate therapy in 68 cases and inadequate in 52. I h had to include under "adequate radiother cases which have had their first X ray ment as long as 6, 12, or more weeks after tion, and only three cases in which pre-operat treatment was given as well. Even with this inte the results are good, and more than justify operative prophylactic therapy, although I h little doubt that earlier irradiation would show better results. Unfortunately, at the present ases are apt to be referred to the radiologist only hen an inadequate operation has been performed. In 40 only of these cases have I been able to give dequate X ray therapy after radical amputation, nd these I have shown in Table IV. In working out e end-results, which are seen in Table III., it will noted that adequate X ray therapy has improved e three-year end-results by 23 per cent. in I.P. and C. cases and 44 per cent. in II.P. and II.C. cases; e five-year end-results by 23 per cent. in I.P. and C. cases, and 40 per cent. in II.P. and II.C. cases; and e 10-year end-results by 4 per cent. in I.P. and C. cases and 69 per cent. in II.P. and II.C. cases. e 4 per cent. is not a correct figure, as two deaths t of three were not due to cancer. This is surely questionable evidence of the efficacy of such atment.

ABLE II.—SHOWING PERCENTAGE OF SURVIVORS AFTER OPERATION ACCORDING TO STAGE OF DISEASE, AS COMPARED WITH UNTREATED CASES, LIFE TABLE, AND MY OWN CASES TREATED WITH RADICAL AMPUTATION FOLLOWED BY ADEQUATE X RAY THERAPY.

Period of urvival.	Life table (age 50).	Untreated cases (Greenwood's 1651).	Cases of radical surgical operation.			The author's own cases.			
			I.P. only. (149).	I.P. and I.C. (431).	II.P. and II.C. (1269).	Radical surgical operation followed by adequate X rays.			
						Cases.	Analysis according to type of case.	I.P. and I.C.	II.P. and II.C.
years.	96·4	28·6	80·8	77·6	38·2	46 (1914–1927)	I.P. and C. = 11 II.P. and C. = 29	100	82·7
„	93·6	14·4	73·0	67·1	26·6	28 (1914–1925	I.P. and C. = 10 II.P. and C. = 18	90	66·6
„	85·2	0	60·3	53·8	14·2	13 (1914–1926	I.P. and C. = 7 II.P. and C. = 6	57·1*	83·3

The first six columns are taken from the Report on the Late Results of Operation for Cancer of the Breast in 2006 cases, by Lane-Claypon, issued by the Ministry of Health, 1923. The last four columns are taken from my own series of 150 cases of cancer of the breast, showing how th surgical end-results are improved by adequate post-operative intensive X ray therapy.

Class I.P. = Axillary glands not involved, as reported by the pathologist
„ I.C. = „ „ „ „ clinical evidence only.
„ II.P. = „ „ involved, as reported by pathologist.
„ II.C. = „ „ „ „ clinician only.

* This percentage should be higher as two deaths not due to cancer.

TABLE III.—EXAMPLES TAKEN FROM AMERICAN AND CONTINENTAL STATISTICS.

End-results in Cases of Radical Amputation Only.

ollected by—	Cases.	Survivals (a) without and (b) with glandular involvement at end of—		
		3 years.	5 years.	10 years.
yo Clinic[11]) Stuart Harrington[7]	2083	(a) 79 % (b) 37 %	(a) 70 % (b) 22 %	(a) 55 % (b) 18 % 43 % dead.
Judd (1902–1912)	609*	44·7 % (many with recur.).	—	
rton Lee[3] (New York)	—	—	(b) 15 %	—
dman[16] (Philadelphia)	50 (private cases).	72 %	48 %	14 % (26 % dead).
ander[17] Stockholm, 1890–1912)	284 (81 not traced).	70 % with fatal recur.	12 %	—
chholz[3] Magdeburg)	121	24 % symp.-free.	22 %	11 %

End-results in Cases of Radical Amputation followed by Intensive X Ray Therapy.

Surgeon and hospital.	Cases.	Survivals without and with glandular involvement at end of 5 years.	
		Without.	With.
Pfahler and Parry[9] (Philadelphia)	242	89 %	47 %
Schmitz[12] (Chicago)	107	69 %	51 %
Burton Lee[3]	355	—	35 %
Doederlein (Munich)	—	80 %	36 %
Wintz[3] (Erlangen)	—	81 %	38–56 %
Buchholz[3]	237	33 % symp.-free.	24 % symp.-free after 10 years.

* Results known in 514; 266 known to be deceased.

DEQUATE RADIOTHERAPY IN CASES OF INCOMPLETE OPERATION.

Of these I have in my series 14 cases; 11 are alive d well, but 4 of these are too recent to be of lue in any table of statistics. Ten cases were treated between 1914 and 1927. Of those alive and well No. 1 was treated 12 years ago and No. 49 7 years ago.

CASE I.—The patient was a married woman aged 51, without children. She had noticed the lump a few weeks before coming to me in 1917. I performed a simple amputation, as the patient took the anæsthetic very badly. I began treating her with X rays three weeks later. Six months later the axillary glands on both sides became hard and large. With further X rays, which I continued for two years, these became normal, and the patient has had no further recurrence and is extremely well.

CASE 49 was also interesting; she came to me in 1923 at the age of 46. She was a widow with two children, and had noticed a lump for the last three years. Although she was, technically speaking, inoperable as the axillary glands on both sides were enlarged and hard, I advised and performed a palliative simple amputation, starting prophylactic X ray therapy three weeks after and continuing it at intervals for two years. The glands are now normal, and there has been no sign of recurrence (seven years after.)

INADEQUATE RADIOTHERAPY.

I have carried out inadequate radiotherapy in 43 other cases combined with radical operation, and in 9 cases combined with incomplete operation. In the

TABLE IV.—FORTY CASES OF THE AUTHOR'S OWN SERIES IN WHICH RADICAL OPERATION WAS FOLLOWED BY ADEQUATE X RAY THERAPY.

Case.	Year.	Age.	Pregnancies.	Operation.	Type of case.	Pathological report.*	Time between operation and radiotherapy.	Radiotherapy.	Time between operation and recurrence.	Recurrence.	Duration of life after operation.
4	1915	45 S	—	Radical.	A, c1.	Duct carcinoma.	—	23 over 3 yrs. A2, B, c1, and Ra Br needles.	11½ yrs.	Local sloughing—to bone.	15 yrs. (S.L.).
7	1917	37 S	—	„	A, c1.	Alveolated masses of epithelial cells in a scanty fibrous stroma; undoubtedly malignant.	Pre- and post-. 2 wks.	A2, c2, 70 over 4 yrs.	7 mths., $1^{11}/_{12}$ yrs.	Supraclavic.; local nodules.	4¼ yrs. (died: T.B.).
8	1922	49 M	2	„	A.	Advanced spheroidal-celled carcinoma; cancer cells actively growing and showing no signs of degeneration.	1 mth.	Three A2, two A1 over 8 mths. +A1 1930.	—	None.	8 yrs. (S.L.).
14	1921	43 M	1	Radical; palliative	B1, c1 and c2	(1) Definite chronic scirrhus; local malignancy relatively slight. (2) Advanced spheroidal-celled carcinoma penetrated widely into surrounding fat.	Pre- and post-.	A2—15 over 19 mths. +A1, B1 and c1.	3½ yrs.	Distant spine and phalanx; other breast.	4¼ yrs.
16	1920	49 M	3	Radical.	B1.	Advanced carcinoma mainly scirrhus; cells show active proliferation; gland shows complete replacement by cancer growth.	Pre- and post-.	A2—23 over 7 mths., c1.	—	None.	10 yrs. (S.L.).
17	1922	28 M	0	Two-stage.	B1, c1 and c2	Sections show definite malignant condition.	24 days.	A2—11 over 10 mths., A1, B and c2.	8 mths.	Local; distant.	1 yr.
22	1917	46 S	0	Two-stage; simple.	B1, c2.	Gland tissue completely replaced by malignant carcinomatous growth.	3 mths.	A2—30 over 3 yrs., B and c2.	10 mths.	Other breast.	13 yrs. (S.L.).
28	1917	57 M	1	Breast and glands.	A.	Carcinoma, type not stated.	3 wks.	A2—30 over 3½ yrs., B and c2.	—	None.	5 yrs. (death not due to cancer).
33	1917	66 M	0	Radical.	A, c2.	Malignant growth with cystic degeneration.	3½ wks.	A2—13 over $1^{7}/_{12}$ yrs., B, c2.	6½ wks.	Supraclavic.	3 yrs. symptom free (N.T.).
34	1914	55 W	2	„	A, c1.	Carcinoma, type not stated.	3½ yrs.	A2—8 over 8 mths., B, c2.	4 yrs.	Local nodule.	8 yrs. Alive and well (N.T.).
37	1921	47 M	2	Radical; recur. nodule removed.	B1, c1.	(1) Advanced and very malignant soft cancer; active proliferation. (2) Spheroidal-celled carcinoma, much fibrous stroma, malignancy relatively feeble.	2 mths.	A2—57 over 5 yrs., A1, B, c2.	18 mths.	In scar, mediastinum, and brain.	5 yrs.
39	1919	53 W	3	Radical.	A.	Carcinoma, type not stated.	3 wks.	A2—36 over 3 yrs., B, c2.	—	None.	11 yrs. (S.L.).
41	1918	35 M	0	Two-stage.	B1.	A very malignant growth in the form of an alveolar carcinoma. No gland tissue present, only carcinoma.	6 wks.	A2—36 over $3^{2}/_{12}$ yrs., B, c2.	—	„	12 yrs. (S.L.).
52	1922	55 W	3	„	B1.	Carcinoma; lobulated and cystic variety. Proliferation in the cysts and in the loculi, malignancy.	4 mths.	A1—4 over $2^{3}/_{12}$ yrs., B, c2.	—	„	8 yrs. (S.L.).
56	1926	40 W	2	Radical.	B1.	Very chronic scirrhus almost entirely converted into dense fibrous tissue. Gland shows considerable diffuse infiltration.	6 wks.	A2—6 over 4½ mths., c2.	—	„	4 yrs. (S.L.).
65	1925	61 M	3	„	B1, c1.	Definite malignant growth of rather unusual type.	6 wks.	A1—2 over 2 yrs., c2 +Ra Br needles 4 times.	$1^{8}/_{12}$ yrs.	Local.	5 yrs. (S.L.).
66	1921	40 M	1	„	B1, c2.	Soft-celled carcinoma of high malignancy; encephaloid type.	15 days.	A2—17 over $1^{8}/_{12}$ yrs., A1—2 over 4 mths., B, c2.	6 yrs.	Mediastinum.	6 yrs.
68	1922	49 S	0	„	B1, c2.	Very malignant scirrhus in some parts cancer cells are in actively proliferating masses. Glands replaced by similar malignant growth.	11 wks.	A2—8 over 6 mths. A1—8 over 3½ yrs., B, c2.	8 mths.	Other breast.	4 yrs.
69	1914	47 S	0	Radical amp.; removal of supra-clav. recur.	B1, c2†.	Carcinoma; type not stated.	10 mths.	A2—39 over $3^{8}/_{12}$ yrs. +6 over 3 wks., B, c2.	8 mths.	Gland above rt. clavicle.	16 yrs. (S.L.).
70	1926	46 M	3	Two-stage.	A.	Spheroidal-celled carcinoma, unusual type of growth, very malignant.	11½ mths.	A2—3 over 3 mths., c2.	—	None.	4 yrs. (S.L.).
72	1926	37 W	0	Radical.	B1.	Carcinoma; type not stated.	2 mths.	A1, B, c2.	—	„	4 yrs. (S.L.).
73	1925	26 S	—	„	A.	Ducts much distended and filled with actively proliferating epithelium. No actual malignancy present, but appearances indicate first stage.	3 mths.	A1—2 over 7 wks., B, c2.	—	„	6 yrs. (S.L.).
75	1925	35 M	2	„	B1, c1.	Carcinoma; type not stated.	6 wks.	9 treatments and radium, c2.	5 wks.	Local.	2 yrs.
79	1925	58 M	0	„	B1, c2.	Typical chronic scirrhus. Much fibrous tissue and general inflammatory reaction. Glands invaded by malignant growth.	2 mths.	A1—4 over 5 mths., B, c2.	14 wks.	Supraclavic. and mediastinal.	[illegible]
80	1923	40 M	1	„	B1, c2.	Breast scirrhus carcinoma. Lymph glands; extensive secondary infiltration with carcinoma growing rapidly.	5 wks.	A1—2 over 1 yr. B, c2.	4 yrs.	Other breast.	[illegible]
82	1923	47 W	0	Two-stage.	A.	Scirrhus carcinoma. Axillary glands show extensive deposits.	6 wks.	A1—2 over 5 mths., c2.	—	None.	6½ yrs. (S.L.).

greater proportion of cases it was performed for recurrences in patients who had not been treated with prophylactic radiotherapy, and in other cases it was given for the relief of pain.

DEEP X RAY THERAPY ONLY.

I have used this only in five cases, when operation was contra-indicated by the condition of the patient. One of these I lost sight of after two X ray treatments. Of the other four, two lived three years, one four, and one five years after the beginning of treatment.

In my cases I have included all five types—namely:

(a) early without apparent secondaries;
(b) advanced with secondaries (i) axillary; (ii) supraclavicular;
(c) recurrence after operation (i) local; (ii) distant.
(d) primary inoperable.
(e) primary operable, but operation refused or contra-indicated.

PATHOLOGICAL REPORTS AND RADIOLOGICAL TECHNIQUE.

The pathological reports, of which I have records all but a small percentage of cases, are classified under the following headings:—

(a) Spheroidal-celled (mainly fibrous); (b) spheroidal-celled (mainly cellular); (c) "carcinoma," type not stated; (d) Adenocarcinoma; (e) columnar-celled; (f) colloid cancer; (g) Paget's disease; (h) mixed carcinoma; (i) sarcoma; (j) no pathological report obtainable.

I have, of course, exact notes of the technique used in each case, but my experience has been that of others—namely, that the success of treatment depends more on the type of case when first treated and the shortness of time between the operation and radiotherapy than on the type of growth, marked radiosensitivity being no criterion of the ultimate ease of cure.

The actual technique has been changed with the change of type of the X ray installations used. I have tried to keep up with the modern development in apparatus.[15] In 1922 I adopted a modification of the Erlangen technique, as worked out by Seitz and Wintz,[2] using a voltage of 136,000 and giving only one or two massive treatments. In 1929 I further modified my technique by using the Stabilivolt. Briefly, my present technique is this:

The patient is prepared as for a minor operation; an aperient is given the day before if necessary, and she takes only a light breakfast. The part to be irradiated is mapped out with a skin pencil. If the supraclavicular glands are found not to be affected they are carefully avoided. If the axillary glands which have been removed are found to be carcinomatous the axilla is included.

In my early cases I rayed the patient with her arm held at right angles to her body; in my later cases with the arm comfortably to the side. My present technique for prophylactic irradiation is one big field anteriorly, the focal distance being 40–50 cm. I use either 0·5 Cu. +2 al. or 1 Cu. +2 al. filter, a voltage of 150–180,000, 3 ma. in the secondary current, a Coolidge or A.E.G. tube of a unit skin dose of approximately 12·15 min., and a depth dose of 18·6 per cent. In every case I warn the patient to be careful not to apply

TABLE IV.—FORTY CASES OF THE AUTHOR'S OWN SERIES IN WHICH RADICAL OPERATION WAS FOLLOWED BY ADEQUATE X RAY THERAPY—(*continued*).

Case.	Year.	Age.	Pregnancies.	Operation.	Type of case.	Pathological report.*	Time between operation and radiotherapy.	Radiotherapy.	Time between operation and recurrence.	Recurrence.	Duration of life after operation.
83	1918	63 M	2	Simple amp., rt., 1918; radical, lt., 1926.	A.	1918: Chronic mastitis only. 1926: Dense fibrous tissue with areas of acute inflammatory reaction, but no malignancy. Glands almost completely replaced by spheroidal-celled carcinoma.	6 wks.	A1—1, B, C2.	—	None.	12 yrs. (1st op.) 4 yrs. (2nd op.) (S.L.).
84	1916	65 W	1	Radical.	B1.	Carcinoma; type not stated.	2 yrs.	A2—53 over 7¼ yrs., A1—5 over 2¼ yrs., B, C2.	—	"	20 yrs. (died: heart trouble).
87	1927	54 S	—	"	B1, C1.	" " "	17 days.	A1—13 over 2¼ yrs., B, C2.	1 yr.	Subcut. nodules, chest wall.	3 yrs. (S.L.).
97	1927	49 M	0	"	B1, C2.	Duct carcinoma. Gland shows considerable involvement; cancer cells here are spheroidal and show active growth.	1 mth.	A1—2 over 1⁹/₁₂ yrs., B, C2.	14 mths.	Costo-sternal junction.	3 yrs.
98	1927	47 S	—	"	B1, C1.	Advanced spheroidal-celled carcinoma invading the surrounding tissues. Gland replaced by masses of carcinoma.	2 mths.	A1—2 over 7 mths., B, C2.	6 mths.	Centre of scar.	3 yrs.
99	1927	58 S	—	"	B1, C2.	Carcinoma; type not stated.	2 wks.	A1—1, B, C2.	6 mths.	Liver.	7 mths.
00	1927	47 S	—	Two-stage.	B1.	Simple cystic mastitis; at another part a definite carcinoma (cellular scirrhus). Inflammatory evidence absent.	3 mths.	A1—1, B, C2.	—	None.	3 yrs. (S.L.).
01	1925	63 S	—	Radical.	B1, C1, and C2.	Carcinoma; type not stated.	2 wks.	A1—7 over 3 yrs., B, C2.	2 yrs.	Upper scar and supraclavic.	5 yrs. (S.L.).
02	1927	63 M	0	"	B1.	" " "	2 mths.	A1—1, B, C2.	—	None.	3 yrs. (S.L.).
03	1927	60 M	2	"	B1.	Very advanced malignant growth (spheroidal-celled carcinoma) invading surrounding adipose tissue.	2 mths.	A1—1, B1, C2.	—	"	3 yrs. (S.L.).
06	1927	66 M	3	Two-stage.	B1.	Carcinoma; type not stated.	5 wks.	A1—3 over 4 mths., B1, C2.	—	"	3 yrs. (S.L.).
04	1924	59 M	0	Radical.	B1, C2.	" " "	3 mths.	A1—2 over 6 mths., B1, C2.	5 yrs.	Post-cervical region.	6 yrs. (S.L.).
[illegible]	1927	56 M	0	"	B1, C1.	" " "	3 wks.	A1—4 over 1 yr., B, C2.	18 mths.	Spots over scar.	3 yrs. (S.L.).
09	1914	52 M†	1	"	B2, C2.	Scirrhus.	5 mths.	A2—3 over 3 mths., B, C2.	9 mths.	Liver, brain, œdema of arm.	11 mths.

Type of Case (at time of operation): A, Early and without pparent secondaries; B, advanced with secondaries; B1, illary; B2, supraclavicular; C, recurrence after operation; , local; C2 distant.

Radiotherapy: A1, New technique; A2, old technique; , axilla; and B1, supraclavicular areas exposed; C1, pre- id post-operative; C2, post-operative only.

* The pathological reports have been greatly abbreviated for inclusion in this table.

† (viz., supraclavicular).

M. = Married. S. = Single. W. = Widow.

S.L. = Still living. N.T. = Not traced after.

soap or any irritant or great heat to the skin for some weeks, and to use an emollient cream (such as cera. alb. ʒiss., cetaceum ʒiss., Ol. Olivæ ℥ix., and aq. destil. ʒiiiss.) for at least a week.

This treatment I like to repeat in six weeks.

CASTRATION.

Hans Meyer, Polano, Rosenberg, and Wintz and his disciples advocate, in addition to X ray treatment of the breast, the induction of an artificial menopause by means of deep X ray therapy. They maintain that every menstruation as well as pregnancy is accompanied by changes in the activity of the mammary gland. In some 38 per cent. there is increase in the size of the gland just before the period; there is actual secretion in 6 per cent. of parous women and in 1·5 per cent. of nulliparous women—due probably to the action of an ovarian hormone. They assert that activity of the mammary gland is to be avoided in every carcinoma of the breast. Wintz reports several cases in which, for instance, a pregnancy has been accompanied by recrudescence of malignant growth in an apparently quiescent radiated breast. Some years ago Stanley Boyd published a series of cases in which he had performed double oöphorectomy in cases of breast cancer. Sir Holburt Waring[17] also performs this operation in inoperable cases, and has observed reduction in the size of the tumour in 20–30 per cent., only to be followed by recrudescence three years later.

The technique is simple, and with my own apparatus I can now ensure a menopause in one, or at the most, two treatments of one and a half hours each.[18] I have, however, never been able to persuade myself that there is sufficient evidence of its value in cases of breast cancer to justify the extra irradiation involved, and I have therefore never carried it out for the treatment of this disease.

RADIUM TREATMENT.

In recurrent nodules occurring over sternocostal articulations, or over or near the scar, in some primary cases, and for supraclavicular glands, there is perhaps no better treatment than radium. There are three methods of applying radium in cancer of the breast:—

1. Superficially, by means of batteries of needles enclosed in applicators of platinum or silver and further screened by sheet rubber 1 mm. thick; or by fixing the needles on to a mould of Columbia paste (a mixture of wax and sawdust). It is important to calculate the dose of radium very exactly to ensure a homogeneous radiation.
2. By needles containing radium distributed evenly in such a way that 1 mg. radium element is contained in each cm. of length and suitably screened, buried into the tissues at even distances, and left in situ a certain number of hours.
3. At a distance, using the beam of rays from a mass of radium contained in the so-called "bomb." In this case by means of cross-fire—viz., introducing the rays through different areas of skin, a larger dose can be applied to the depth of the tissues without fear of too much skin reaction.

Geoffrey Keynes (St. Bartholomew's Hospital)[16] has recently published, in his Hunterian lecture, a series of 109 cases in which he has used radium only for carcinoma of the breast, and claims that even for early cases radium is the method of choice. Failures are probably due to an insufficiently long exposure or to treatment of an insufficient area. Sir Lenthal Cheatle insists on the widespread occurrence of microscopic changes in the mammary gland which contains a carcinoma, apart from the lymphatic infiltration. Keynes therefore advocates the wide application of radium—namely, beneath the breast, beneath the pectoral muscles, in the axilla, and under the costocoracoid membrane above the clavicle, and in the upper three or four intercostal spaces—for a period of 168 hours (7 days). The main principle is prolonged exposure to a relatively small dose of radium and the application of the needles in such a way as to avoid puncturing the actual growth itself.

The results are, briefly, a change in the size of the tumour within two or three weeks. By the end of two months the tumour may, in favourable cases, shrink to half its original size, and disappear in three to six months. If, by the end of six months, the growth is stationary, a second application of radium may be given or the residual tumour may be excised. For recurrences—especially those which are so common over the costosternal region—radium in adequate doses seems to be infallible. In my own short series of radium cases they have all completely disappeared, and so far there has been no recurrence.

SURGERY, USING THE DIATHERMY OR ENDOTHERMIC KNIFE.

To prevent the actual dissemination of carcinoma by operation—a condition occasionally seen, the secondary growth appearing in the skin and at a distance apparently even more quickly than if no surgical treatment at all had been undertaken—several surgeons of late have used the diathermy knife instead of the ordinary scalpel. I have not myself used this method in a radical amputation of the breast, although I have done so for recurrent nodules in several cases and for seven cases of primary carcinoma of the vulva. Indeed, there is much to recommend it, and the newest type of diathermy apparatus is so devised that the actual cut is cleaner and causes less coagulation and charring of the tissues; the wound therefore heals by first intention.

Conclusions.

(*a*) For successful treatment in operable cases we have to ensure early treatment, when the disease is still localised to the breast, by

(1) *radical operation* removing in one piece the breast, fascia, pectoral muscle or muscles, fat and glands; and, in addition, most important of all,

(2) *adequate X ray therapy* beginning not more than three to seven weeks after operation, and lastly,

(3) in all advanced cases three or four needles of *radium* placed along the third, fourth, fifth, and sixth intercostal spaces in the hope of destroying cancer cells in the internal mammary group of lymph glands and two or three needles in the infraclavicular region and axillary region.

(*b*) *For inoperable cases* radium and X ray treatment according to the kind of recurrence. In those cases in which reduction in the size of a recurrent nodule takes place and it becomes freely movable, surgical eradication, preferably by the endothermic knife, may be carried out within 8–10 weeks. In those cases in which recurrence and metastases produce pain and discomfort, radiation, according to Bloodgood, is the only method that offers any relief at all.

The most important factor of all in ultimate success is the early treatment of the disease. As symptoms are unfortunately often absent until the tumour is well developed, probably the only way to ensure early treatment would be to establish cancer clinics all over the country, and circularise the fact amongst women of all classes who have passed the age of 35, urging them to be regularly overhauled every six months by a competent specialist. Only in some such way as this are we likely to reduce the cancer incidence.

(*Bibliography at foot of next page.*)

ANTHRACOSIS, SILICOSIS, AND TUBERCULOSIS IN COAL-MINERS.

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The name "anthracosis" has been loosely applied to describe the black pigmentation so often found in the lungs of city dwellers and of persons exposed, either in town or country, to the smoke of coal fires. It was first used, however, in a more restricted sense by its originator, Dr. T. M. L. Stratton (1838), who coined the word to describe the "black lung" of coal-miners, and it seems desirable to retain the word for this condition only.

As long ago as 1813, George Pearson had demonstrated clearly that the black pigment accumulated in the lungs of city dwellers was carbon. The fact that the anthracosis of coal-miners may present a marked accumulation of silica as well as of carbon in the lung tissue was first proved by E. H. Greenhow in 1869, this observer publishing his chemical analysis of a coal-miner's lung in that year and demonstrating the existence of 30 per cent. of silica in the lung ash after incineration. Tattersall in 1926 called attention to the occurrence of silicosis, as proved by radiological and clinical findings, in a series of South Wales coal-miners who had been exposed to silica dust while working with drills in "hard headings."

That radiological evidence of a lung fibrosis indistinguishable from that of silicosis is to be found, not merely in those coal-miners employed in "hard headings" but in a large proportion of middle-aged coal-miners working at the "coal face" only, has been demonstrated in the course of a recent "radiological study of certain groups of 'industrially healthy' South Wales coal-miners," carried out by members of the medical staff of the Welsh National Memorial Association, and published in the Association's eighteenth annual report, 1930; while the findings of Collis and Gilchrist (1928) in coal-trimmers suggest that somewhat similar appearances may be found in X ray films of the lungs of persons other than coal-miners exposed to high concentrations of coal dust.

The writer has been engaged for some years in an examination of the pathological and histological characters of the lungs of coal-miners. In 1927 he published a brief description of his findings in one of the "hard heading" workers of Tattersall's series, together with a chemical analysis of the lung ash carried out by Dr. J. Pryde, of the Physiology Department, Cardiff, showing that a marked increase in perivascular and peribronchial lung fibrosis and blockage of lymph channels was associated in this case with a percentage of silica much in excess of that found in the lungs of a non-anthracotic male adult, dying of pulmonary tuberculosis, examined as a control.

Since that date, the writer and Dr. A. F. Sladden, of the Beck Laboratories, Swansea, working on a series of lungs from South Wales coal-miners, have been able to carry their observations further and to link up their pathological and histological findings with chemical analyses carried out, at first, by Dr. Pryde, and Mr. C. A. Seyler, of Swansea, and later, through the good offices of the Mines' Department, by Prof. R. V. Wheeler and Dr. F. V. Tideswell, in the laboratory of the Safety in Mines Research Board at Sheffield. The results of this investigation have recently been published (1930), and need not here be referred to in detail.

Anthracosis a Dual Condition.

The only point to which it is desired to direct attention is the fact, which comes out clearly from our investigations, that the anthracosis of coal-miners is a dual condition in which the retention of coal dust in the lungs is associated with and, in all probability, due to, a state of diffuse or nodular lung fibrosis and lymph blockage indistinguishable from that found in the silicosis of gold-miners on the Rand and of those engaged in the "refractories" industries in this and other countries.

Not only are the pathological and histological appearances similar but the chemical analyses reveal, in the lung ash, percentages of silica of the same order as those found by J. McCrae (1913) in the lungs of Rand gold-miners; while the examination of lung sections with "crossed Nichols" shows the same accumulation of doubly refractile particles described by Watkins-Pitchford and James Moir (1916) in silicotic lungs at Johannesburg.

Moreover, in our coal-miners' lungs, the extent of the fibrosis and lymph blockage, the percentage of silica in the lung ash, the number of doubly refractile particles visible in the sections, and the degree of clinical pulmonary disease recorded prior to death are all found to vary directly with the amount of exposure of the individual to silica-containing dust, being greatest in those with an industrial history of work in "hard headings" or as "repairers," although often quite marked in coal-miners with no history of work other than at the coal face.

In the case of the "hard heading" workers and "repairers," the source of the silica dust leading to this silicotic fibrosis is obvious. In the case of other types of coal-miners, it is less clear, and to the elucidation of this problem of the source of the silica risk in coal-mining, further research is urgently necessary. But, for the moment, it suffices to say that, in the coal-mining industry, a risk of silicosis exists, that is as great, in the case of certain categories of coal-miners, as the risk of silicosis in gold-mining, tin-mining, and the "refractories industries," and that, in a large proportion of old coal-miners of other categories less intimately in contact with stone dust, there is radiological, pathological, and chemical evidence of a condition indistinguishable from pulmonary silicosis.

(*Continued from previous page.*)

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Resistance to Tuberculosis.

One characteristic feature of silicosis, however, is absent in the case of coal-miners—the increased liability to tuberculosis. In fact, there is much reason to think that coal-miners, far from being specially liable are, on the contrary, exceptionally resistant to pulmonary phthisis. Haldane (1923), dealing with this subject, speaks as follows: "The diminished relative liability to phthisis among coal-miners has existed for generations. In the available statistics for 1849–53 it is no less marked than now." Collis (1922) expresses the same view. "The incidence of phthisis among coal-miners, not only in Great Britain but in other countries, is lower than that found in other occupations with the exception of agriculture." Sir Thomas Oliver (1916) writes as follows: "The comparative freedom of the coal-miner from tuberculous phthisis is not confined to this country alone. According to a census of the United States, pulmonary consumption caused 10·6 per cent. of all deaths among miners and quarrymen as against 16·2 per cent. for all occupied males."

That the contrast between coal-miners and other workers in silica dust is a striking one will be appreciated from the following figures extracted from the Registrar-General's Decennial Supplement, 1921.

Mean Annual Respiratory Tuberculosis Mortality by Age-Groups per 100,000.

Age	16–	20–	25–	35–	45–	55–	65–	70–
All occupied and retired civilian males	69	136	133	160	166	150	114	64
Coal-hewers and getters ..	40	78	80	110	114	139	147	47
Metal grinders	61	136	237	551	1149	1246	761	383
Tin and copper miners ..	—	91	746	1520	1744	2632	517	680

There can be no doubt whatever that silicosis, when due to exposure to silica dust without coincident exposure to coal dust, is accompanied by a terrible liability to tuberculosis in late middle age. There is no need to labour this point, which is known to all who have studied the subject.

With regard to coal-miners and their fortunate exemption from this risk, we are driven to the alternative of believing either that the lung fibrosis from which they suffer is not due to silica dust or else that there is, in the industry, some factor peculiar to coal-mining and capable of neutralising the risk of tuberculosis to which silicotic coal-miners would otherwise be exposed.

As already indicated, there is no appreciable difference between the pathological, chemical, and radiological findings in anthracosis in South Wales and silicosis on the Rand except the added accumulation of coal dust in the former; and it would, therefore, appear unreasonable to suppose that the lung fibrosis of coal-miners is essentially different from that called silicosis in gold-miners. If this much be conceded, we are forced to the conclusion that there is some factor peculiar to coal-mining which is inimical to the development and spread of tuberculosis in the lungs. Oliver believes this factor to be "the better ventilation of the coal-mines, the air of which, as it passes onwards through the mine, becomes rid of bacteria and reaches the miner at his work in a purer state than the air we breathe in the streets of a large town."

This theory appears hardly tenable when it is recalled that the ventilation of the Rand gold-mines is at least as good as that of the coal-mines of South Wales; nor is it consistent with the fact that the coal-miner, who, after all, lives the greater part of his life above ground and is equally exposed with the rest of the population to home contact with infection, suffers less from tuberculosis, in every age-group except one, than "all occupied and retired civilian males."

Haldane, in the paper already quoted, says: "It is difficult to resist the conclusion that in some way the inhalation of dust in coal-mines tends to prevent phthisis," and he appears to think that the beneficent action of coal dust is due, in part at least, to a power of stimulating "the physiological process of dust excretion" or, in other words, of helping on the process of carrying the injurious silica dust out of the lungs in the interior of phagocytic cells. This idea was thought to gain support from the experiments of Mavrogordato (1918) on the dusting of animals with silica dust and coal dust in varying combinations. It does not, however, explain the mechanism by which silica dust, when inhaled alone, gains access to the lung tissues. In the writer's opinion, it is only by transport in the interior of phagocytes that it can pass from the alveoli into the interstices of the pulmonary tissue, a consideration which implies active phagocytosis of silica particles. Incidentally, these particles can be located inside phagocytes by the examination of stained sections alternately by direct and by polarised light. Kettle (1930), in a recent paper, opposes this theory of the stimulation of the phagocytosis of silica particles by coal dust, and quotes Gardner to the effect that "quartz produces the greatest degree of phagocytic activity of any dust he has investigated."

To the writer, his own observations into the anthracosis of coal-miners suffice to convince him that the simultaneous inhalation of silica dust and coal dust over long periods leads to a blocking up of lymph drainage by silicosis, and a resulting retention of the coal dust in the lungs rather than to any increased elimination of the one dust with or through the other, a belief which is supported by the experiments of Mavrogordato (1922) in the exposure of guinea-pigs first to silica dust and then to coal dust. It is clear, in any case, that the theory of stimulation of the "physiological process of dust excretion" does not suffice to explain the relative freedom of coal-miners from tuberculosis, since they are by no means free from silicosis.

It comes to this: that the only outstanding histological and chemical difference between the silicotic and the anthracotic lung is the retention of excessive coal dust in the latter; and that the only outstanding epidemiological difference between pulmonary silicosis and anthracosis is the absence of tuberculosis liability in the latter.

This being so, it is natural to associate the presence of accumulated coal dust in the lung with the relative exemption of coal-miners from a high tuberculosis mortality and to seek in the one phenomenon an explanation of the other.

The "Protective Influence" of Coal Dust.

The theory that coal dust affords some degree of protection against pulmonary tuberculosis has been put forward by numerous investigators. Wainwright and Nichols (1905) give interesting statistics in support of this contention from Scranton in the United States, and add a valuable summary of the views of German workers on the subject. They quote Goldman (1905), who holds that coal dust has an antiseptic action, and Arnold (1885), who thinks that "if there is any action, it is due to the fact that the deposits of dust prevent the spread of the poison," and does not believe in a direct bactericidal effect of carbon on the tubercle bacillus. Their own experiments in vitro failed to show any antiseptic action by carbon but, in a limited number of in vivo experiments in the induction of experimental tuberculosis in guinea-pigs previously rendered anthracotic by repeated exposures to coal dust, they found that there was, in the dusted animals, an absence or limitation of the tuberculisation of the lungs as compared with the non-dusted "controls," a finding which was, however, less definite in a subsequent series of experiments, and which Mavrogordato (1922) has failed to confirm. "Our opinion," they conclude, "is that the coal dust in the lungs does exert a protective influence against the tubercle bacilli, and that it is due to the stimulating effect of coal dust on connective tissue growth." Their conclusion in favour of a "protective influence" is probably right but, in view of the much greater power of silica dust than coal dust to stimulate the formation of connective tissue and its known association with an increased tuberculosis liability, their theory to account for this protective influence is almost certainly wrong.

There appear to be valid arguments against the three main theories so far suggested to explain the alleged protective influence of coal dust against tuberculosis. Neither the physiological concept of an adjuvant action to the phagocytosis of silica particles, nor the theory of an antiseptic action, nor that of a stimulation of connective tissue by the carbon particles will bear close investigation. There remains the possibility that carbon may owe its "protective influence" to its power of adsorbing toxic substances. The adsorptive power of finely divided carbon for colloidal substances such as dyes is well known, and those familiar with the defensive side of gas warfare will recollect the astonishing efficiency of the carbon layer of the "box respirator" in adsorbing poisonous gases.

As to the adsorption of the active principle of tuberculin by carbon, conflicting opinions have been expressed by different observers. Long and Seibert (1925) failed to demonstrate any adsorption of the active principle of tuberculin by animal charcoal, and Jousset (1915) is quoted by Boquet as having failed to obtain any adsorption of tuberculin with "le noir Girard," the type of carbon used by him in his experiments. Boquet, Nègre, and Valtis (1928), on the other hand, were able to show clearly that a very finely divided charcoal, "norit supra," is highly potent in adsorbing from tuberculin the constituent on which its activity depends. Dorset, Henley, and loskey are quoted by Tytler (1930) as finding that adsorbents carrying a negative charge, including charcoal, largely or completely abolish the activity of tuberculin.

The writer has put this question to the test, and has been able to prove beyond any question that the finely powdered dust of anthracite coal is capable of adsorbing a large proportion of the active principle from old tuberculin diluted with normal saline solution. The active principle of tuberculin, as also of tubercle bacilli, that is to say, the part which evokes allergic reactions in hypersensitive tissues, has been shown by Long and Seibert in America and by Tytler (1930) in this country to be a protein. It is probably this same active principle which leads to the allergic reactions around tuberculous foci, reactions which, when excessive, lead on through inflammatory hyperæmia to necrosis and death of tissue. It is not unreasonable, therefore, to assume that the presence of large quantities of carbon particles in the immediate vicinity of tuberculous foci might, by adsorbing the products of the growth and destruction of tubercle bacilli, go far to prevent or diminish the inflammatory phenomena which constitute tuberculous disease.

It is worth noting that carbon particles and tubercle bacilli inhaled into the lungs are dealt with by the same type of phagocytic cell, the monocyte, and carried through the same channels along the lung lymphatics, to the lymph nodes at the hilus; or, if their progress is arrested by the blockage of lymphatics through silicosis or any other cause, they must necessarily take the same collateral channels towards the pleura and the pleural lymphatics or accumulate in the same situations as coal dust in the lung tissue. In the case of the coal-miner, who, like other people, must often inhale tubercle bacilli, there is always certain to be a considerable amount of carbon in the immediate vicinity of such of the bacilli as may reach the lung tissues.

The power of finely divided coal dust to adsorb and inactivate a proportion at least of the active principle on which the clinical effects of tubercle bacilli depend has been established. Whether the collection of carbon particles which have accumulated in the tissues and been bathed in the tissue juices retain their power of adsorbing tubercle protein is a matter for further investigation, but the probability that they can do so is emphasised by the following facts as to the tuberculosis of coal-miners.

The lungs of anthracotic coal-miners often show tuberculous lesions of a peculiar type, characterised by an absence of the tendency to breaking down and cavitation so common in adult phthisis. Lesions of this peculiar type have recently been figured in the paper by the writer and Dr. Sladden, already referred to. The fairly frequent occurrence of these atypical non-cavitating tuberculous lesions in coal-miners is the more interesting in view of the known frequency of negative sputa in clinically tuberculous coal-miners. The writer has encountered numerous cases where the diagnosis of tuberculosis has long remained in doubt owing to a series of "negative" sputum examinations, only to be established, at last, by post-mortem examination or by a positive result from guinea-pig inoculation; and case records in his possession establish the fact that negative sputa are commoner in clinically tuberculous coal-miners than in clinically tuberculous adult males of other occupations in the same district and over the same period.

If the relative exemption of coal-miners from tuberculosis be admitted, and it can hardly be denied, then this fact must be taken into consideration along with the further fact, newly established, that a large number of coal-miners develop pulmonary silicosis in the course of years spent in the industry.

The Economic Aspect.

Apart from its pathological interest, the question has an important economic aspect. At Johannesburg the gold-mining industry pays very large sums annually as compensation to miners found to be developing silicosis; and a superficial glance at the new facts on silicosis in coal-miners might foster the idea that in England and Wales the coal-mining industry ought to shoulder the same burden. But the essential risk for which compensation is paid in South Africa is the *risk of tuberculosis* which is bound up with the silicosis of gold-miners. Dr. L. Irvine, Director of the Miners' Phthisis Bureau at Johannesburg, writes as follows (1929): "An uncomplicated silicosis may undergo prolonged and sometimes apparently indefinite arrest at any stage . . . but in the end infection tends to get the upper hand and, when this occurs, the greater the amount of original damage to the lung by silicosis, the more rapid will be the terminal breakdown. A measure of the extent of the predisposition to tuberculosis is afforded by the fact that, of all the deaths which have occurred in the two groups of cases (primary and antiprimary silicosis, S. L. C.), some 75 per cent. have been due directly to active tuberculosis."

In the case of coal-miners, this excessive liability to tuberculosis is absent. There is, if anything, a tendency to relative exemption from this disease. In this important respect, the coal-miner is in a much more favourable position than the South African gold-miner; and it is not unreasonable to lay stress on this difference at a moment when the recently elicited facts as to silicosis in coal-miners are before the public.

It would be rash to suggest that this condition of silicosis in coal-miners is free from risk. What tuberculosis is to the gold-miner, "bronchitis," perhaps, is to the coal-miner, and the high mortality from this latter cause in old colliers is, in all probability, closely associated with a life of exposure not only to coal dust but to stone dust as well.

But the word "silicosis" has come to imply a marked and formidable liability to tuberculosis, and is thus accepted in regard to "compensation" in "refractories" industries and in the gold-mining industry in South Africa. It is important to dissociate this implication from the word "silicosis" when it is applied to coal-miners.

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THE NEW ABERDEEN INFIRMARY.—The controversy as to whether this building should be erected of granite or brick has at last been settled by a compromise. The material is to be granite with concrete dressings, and the cost will be about £429,000. An all-granite building would have cost £479,000, and a brick one £415,000. The medical block will be the first unit to be erected, and it is estimated that by the end of the present year the money available will, with accrued interest, amount to about £383,000.

EFFECT OF RADIATION ON MACROPHAGES.

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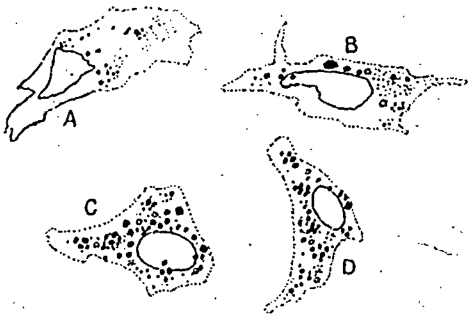
IN the connective tissue reactions associated with the disappearance of tumours produced by medical or radiological treatment macrophages are present and, in the opinion of some observers, play an important part. Todd,[1] in describing the treatment of cancer by lead selenide, insists upon the importance of "the junction tissue" as a defensive barrier, and includes the macrophage as one of its chief cell constituents. Macrophages are commonly present in both sarcomas and carcinomas; in tissue cultures they are conspicuous, since they are the first cells to migrate out into the medium. In sections of tumours which are regressing macrophages are seen filled with cell debris, and at the edge of areas showing necros they tend to accumulate. It is thus possible th macrophages pay a rôle in the disappearance tumours, and on this account the effect of radiation on them has been observed.

In order to study the direct effect of radiation, advantage was taken of the accumulations of macrophages which occur around Jensen's rat sarcoma and the mouse carcinoma T/63. These tumours were exposed in vivo for from one to two hours to β radiation, and then removed at varying periods up to 14 days. The animals were given daily inoculations of trypan-blue under the skin in order to stain the macrophages intra vitam. The tumours with the overlying skin were then removed, frozen sections cut, and counterstained with carmine. The radium applicator used was 59 mg. of radium element; area 2 × 2 cm., screen 0·12 mm. silver.

FIG. 1.



A and B, macrophages close to the radium; C and D, from beneath the tumour at a distance from the radium.

Since it takes two days to stain the macrophages, it is not possible to observe the effect of radiation during the first 48 hours. In two- and three-day specimens no change in the number of macrophages was seen. In these specimens the macrophages close to the radium between the skin and the tumour differed from those away from the radium on the underside of the tumour. These differences are shown in Fig. 1.

The deep macrophages appeared perfectly normal. The superficial radiated macrophages showed much fewer granules of trypan-blue, and also the dye was present in the cytoplasm in minute granules like dust; the nuclei of the radiated cells were shrunken and crenated.

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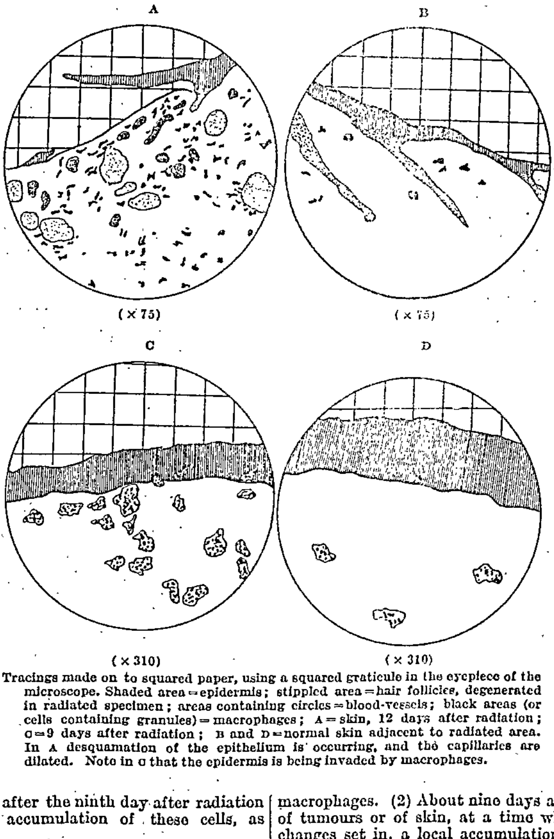
[1] Todd, A. T., et al.: Chemotherapeutic Researches in Cancer London, 1928. See also THE LANCET, August 23rd, p. 389.

In four-day specimens the macrophages appear less numerous between skin and tumour than in non-radiated tumours. This may, however, be due, not to an absence of macrophages, but because they have failed to take up the dye. In those containing the dye the granules are few and small. No further change takes place until about the ninth day, when the epidermal cells of the skin and the tumour cells begin to show degenerative changes as a result of the radiation; then a local accumulation of macrophages takes place.

This accumulation is not very clearly seen around radiated tumours, since they normally show infiltration with macrophages, especially in the neighbourhood of areas of necrosis. In order to show this effect of radiation more clearly rat skin was radiated. Normally the dermis contains very few macrophages but on and after the ninth day after radiation it shows a great accumulation of these cells, as shown in Fig. 2.

FIG. 2.



Tracings made on to squared paper, using a squared graticule in the eyepiece of the microscope. Shaded area = epidermis; stippled area = hair follicles, degenerated in radiated specimen; areas containing circles = blood-vessels; black areas (or cells containing granules) = macrophages; A = skin, 12 days after radiation; C = 9 days after radiation; B and D = normal skin adjacent to radiated area. In A desquamation of the epithelium is occurring, and the capillaries are dilated. Note in C that the epidermis is being invaded by macrophages.

In specimens beyond about the twelfth day the macrophages contained cell debris derived from the degenerated tumour cells and, in the case of the skin, from the epidermis, hair follicles, and connective tissue cells.

These observations are probably of importance in the treatment of cancer by colloidal preparations, such as lead and lead selenide. It is likely that the macrophages will take up these colloids, just as they do dyes, and that thus tumours will become impregnated with the inoculated colloid. Since, therefore, radiation appears to interfere with the taking up of dye by the macrophages, inoculations of colloids should be given a few days before radiation, when these two kinds of treatment are combined. On the other hand, radiation causes a local accumulation of macrophages as soon as degeneration and necrosis begin. It might, therefore, be profitable to give colloid treatment about a fortnight after radiation under the assumption that the accumulated macrophages will bring much colloid to the tumour.

CONCLUSIONS.

(1) After radiation, macrophages do not take up trypan-blue so freely as normal macrophages. (2) About nine days after the radiation of tumours or of skin, at a time when degeneration changes set in, a local accumulation of macrophages occurs.

The radium used in this investigation was on loan from the Medical Research Council.

PRESENTATION HOSPITAL BEDS.—Lord Knutsford recently unveiled a commemorative tablet in Mellish ward at the London Hospital over a bed which is being endowed at a cost of 1000 guineas by the Paramount Philanthropic Society. This Society, which was founded in North London only two years ago, has already collected nearly £3500, chiefly from Jewish sources, and distributed it among 85 hospitals and kindred institutions in the Greater London area.—To celebrate its twenty-first birthday, the Nottinghamshire and District Bowling Association has endowed a cot, at a cost of £1000, in Nottingham General Hospital.

PUBLIC ASSISTANCE COMMITTEE AND RADIUM.—The Brighton public assistance committee have decided to purchase a quantity of radium at a cost of £1752. Mr. H. J. McCurrich, medical officer of the Brighton Infirmary, had reported to a subcommittee the need of the purchase, the more so as he found himself very much hampered by the system of hiring. The subcommittee agreed to the suggestion; also to obtain a loan for ten years to cover the cost. It was stated that the interest and sinking fund charges would amount to £237 per annum, and that the cost of hiring radium during the past 12 months was £134.

CLINICAL AND LABORATORY NOTES

MASTOIDITIS AS A COMPLICATION OF DIPHTHERIA.

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DIPHTHERIA presents a marked contrast to scarlet fever in that in the former disease ear conditions as complications are uncommon and mastoiditis is now very rare. Rolleston[1] does not mention the latter condition as a complication of primary faucial diphtheria; nor is there any reference to it in the works of C. B. Ker,[2] of Allbutt and Rolleston,[3] or of Nothnagel.[4] Schamberg and Kolmer[5] state that otitis media is sometimes a complication, but they do not mention mastoiditis. In these circumstances the case here reported may be of interest.

Bane,[6] in his paper published in 1917, stated that "the literature of diphtheria of the ear is not voluminous." One of the earlier references to the condition was by Billington in 1889. In 1901 Lewin[7] published a long paper dealing with an investigation of 60 cases of diphtheria and of diphtheria with co-existent scarlatina. From his discussion of the literature it is evident that the majority of the cases reported up to that date were really cases of scarlet-diphtheria and not of genuine diphtheria. He showed from his examination of pathological material that diphtheritic affection of the ear was fairly common in an anatomical sense, though clinically the condition was often not recognisable. Lewin concluded that diphtheritic otitis was usually due to a blood-spread of the virus and not to a direct spread from the throat via the Eustachian tube. There is no reference to mastoid disease in Lewin's paper, though he does mention a case of leptomeningitis.

In 1907 Kerrison[8] reported the case of a female patient (aged 19 years) who was suffering from genuine diphtheria. Otitis developed on the sixth day, and on the twelfth day acute mastoiditis was unmistakable. At operation the vertical limb of the sigmoid sinus was exposed and sinus thrombosis followed. Part of the jugular vein had to be excised before the condition cleared. In 1911 Barnhill and Wales[9] divided the otitis media caused by the Klebs-Löffler bacillus into three classes—viz. (*a*) primary diphtheritic inflammation; (*b*) otitis arising by extension from the nasopharynx; (*c*) secondary middle-ear infection accompanying diphtheria of the throat—the most common form. In 1926 Gowen[10] investigated the incidence of otitis in 15,000 infectious cases at the Philadelphia Hospital for Contagious Diseases. He found that otitis occurred in diphtheria only when this disease was co-existent with scarlet fever and measles; the incidence of otitis was then 50 per cent. and of mastoiditis 12 per cent.

The literature all points to the conclusion that, while in an anatomical sense diphtheritic affection of the middle ear may be fairly common, a clinically recognisable acute otitis is infrequent. Further, this form of otitis very rarely spreads to the mastoid cells.

RECORD OF A CASE.

The patient (aged 12 years) was a high-school boy of excellent general physique. He was admitted to hospital suffering from diphtheria, and from the history he appeared to be in the sixth day of the illness. On the day of admission the throat swab was positive, showing organisms which were morphologically diphtheria bacilli.

When he was seen on admission he was desperately ill. The face was pale and the cheeks showed a pinkish flush. There was "bull-neck" enlargement of the cervical glands on both sides, and this appeared to be the cause of considerable dyspnœa; no rib recession was noticed, nor were there laryngeal symptoms throughout the course of the illness. The parotid glands were normal. Blood had dried on the lips, and there was a slight exudation of blood from the gums. Slight rhinorrhœa was present, and the nostrils were somewhat excoriated. Fœtor was marked. A dirty, foul-smelling membrane covered the whole of the left side of the fauces and soft palate and extended forward on to the hard palate. Membrane was also present on the right tonsil and on the pillars. The membrane was greyish in colour with black patches, and separation caused considerable bleeding. Œdema of the soft parts resulted in the uvula being pushed down into the throat. The heart was normal in size. The sounds were regular and pure, but soft. Apart from slight roughness of the respiratory murmur, the lungs showed nothing of note. The liver and spleen were not enlarged or tender, but there was some slight tenderness in the right iliac fossa. The abdominal reflexes and the knee-jerks were present, but not active, and the pupils were equal and reacted to light. There was no sign of any paralysis.

On admission the temperature was 100·4° F., the pulse-rate 120, the respiration-rate 24. The patient had received 6000 units of antidiphtheritic serum before coming to hospital. On admission, 30,000 units were given immediately by the intramuscular route.

On the day following admission (seventh day of illness) the temperature had fallen to 99·2° F., the pulse-rate was 104–120, and the respiration-rate 22–26. The membrane, though still very adherent to the fauces and tonsils, was now separating slightly from the soft palate. There was still marked fœtor, but the faucial œdema had subsided slightly. The patient now showed profuse, thick, sanguineous nasal discharge. The enlargement of the cervical glands was slightly less than on the previous day. There was no increase in the area of cardiac dullness and the heart sounds were regular, though rapid and somewhat soft. Palpation showed slight increase of resistance in the right iliac fossa, but the abdomen was otherwise normal. Examination of the lungs still revealed generalised roughness of the respiratory murmur. During the course of this day the patient again received 30,000 units of antidiphtheritic serum.

On the following day (eighth of the illness) there was a slight improvement in the general condition, and 24,000 units of serum were injected intramuscularly. On the ninth day of the disease the patient showed a very definite improvement. The colour of the face had improved and rhinorrhœa was now absent. The throat was cleansing rapidly, and the faucial œdema had disappeared. The heart sounds were rather soft, but there was no evidence of cardiac dilatation. The temperature was now 98° F., the pulse-rate varied between 104 and 120, and the respiration-rate between 16 and 20.

The progress was uninterrupted until the twenty-seventh day of the disease, when the patient vomited in the evening. On the following day there was a slight but definite enlargement of the liver, and the lower border of this organ was tender. The area of superficial cardiac dullness was normal. The heart sounds showed extra-systoles, but the tone was quite good. There was no epigastric pulsation. The pulse-rate varied from 108 to 120. On the twenty-ninth day epigastric pulsation was present, and the area of superficial cardiac dullness was enlarged to the right. Right otorrhœa developed on the thirty-fifth day. The discharge became rapidly purulent, but there was no tenderness or œdema over the mastoid process. On the thirty-eighth day palatal paralysis was noticed. This complication was very persistent and fairly marked. By the sixty-seventh day of the illness the patient's general condition had improved considerably and the heart sounds were normal. There had been no ocular or pharyngeal paralysis, and the palatal paralysis was then only slightly marked. The purulent otorrhœa still persisted, however, in spite of treatment. During this period there had been no elevation of temperature and there was at no time any œdema over the mastoid process. On the seventy-third day the temperature rose to 100·4°, and on the following day the patient had pain in the ear and a suspicion of œdema over the mastoid. The ear discharge remained copious and purulent.

During the next week the temperature oscillated between 98° and 101°. There was slight tenderness over the mastoid region, and the œdema became more marked but was never very pronounced. There appeared to be a possibility that the condition would resolve without operative interference, and surgical advice upheld this view. Thereafter the temperature remained only slightly elevated (about 99°) until the eighty-seventh day, when it began to rise. The œdema and tenderness over the mastoid persisted but were never very marked. During this period swabs from the throat and from the right ear were negative for diphtheroid organisms. It became rapidly evident that the condition would not resolve without surgical interference. On the ninety-second day of the illness the patient was transferred to the Rotherham General Hospital, where the incomplete mastoid operation was performed by Dr. W. S. Wildman. At the operation considerable erosion of bone was found. Recovery was uninterrupted.

The patient was examined recently and was found to be in very good health. There was no evidence that he had ever had palatal or cardiac paralysis; the hearing was excellent, and showed no diminution on the side previously affected.

COMMENTARY.

The case is interesting in that the patient recovered completely, although he was extremely ill when he was admitted on the sixth day of the disease. During his illness he showed two types of diphtheritic paralysis, in addition to the otitis media and the rare mastoid complication. There was no evidence that an intercurrent disease—such as scarlet fever—was present and had caused the mastoiditis.

The insidious course of the ear condition is to be noted. The otorrhœa had persisted for 59 days and the mastoiditis for 19 days before the case came to operation. During this period the patient was not as ill as might have been expected. This slow but persistent progress of the pathological process in the mastoid antrum may be compared with the similar condition following scarlatina, in which the development is usually more acute. The mastoiditis appears to have been a true complication of faucial diphtheria, although definite proof of the interrelation was not forthcoming.

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THE SULPHUR TREATMENT OF DEMENTIA PRÆCOX.

By P. C. Collingwood Fenwick, L.M.S.S.A.,
ASSISTANT MEDICAL OFFICER, EAST SUSSEX MENTAL HOSPITAL, HELLINGLY.

During a course of research work at the East Sussex County Mental Hospital and the London County Council Mental Hospital, West Park, Epsom, I have treated 30 cases of schizophrenia with sulfosin, a preparation of sulphur in olive oil, as described by Knud Schroeder.[1] All the cases I have treated have been males, and their ages have varied from 13 to 33. Some were recent admissions to hospital, others had been in for several years and had shown no improvement. They were of all types and conditions—stuporous, katatonic, grossly demented, and impulsive. The treatment has been carried out over a period of a year, and so far those cases that have shown improvement have not relapsed. The following table shows the results at a glance:—

Number treated	30	In statu quo	12
Discharged as cured	8	Still under treatment	3
Greatly improved	7		

Of those that were discharged from hospital, four had been in for over two years without showing any improvement, while the others were more recent admissions. Those classified as greatly improved were men who became clean in their habits and were able to show some keenness in the work of the hospital, and who before treatment had lived the lives of vegetables. Their discharge in the future is possible.

Technique and Dosage.—It has been my practice to use a 1 per cent. solution of sulphur in sterile olive oil, and to start the course of treatment by giving 1 c.cm. into the muscles on the outer side of the thigh and to increase the dose by 1 c.cm. until the patient has had 12 injections. As the temperature usually starts to rise about 12 hours after the injection, it is advisable to give the treatment at about 6 o'clock in the evening, so that the night's sleep is not interfered with by constant temperature recording, which is done every half-hour until the maximum is reached, and then every four hours. The fever is generally at its height about 18 hours from the time of the injection and may rise to 105° F., with or without rigors. In 48 hours it has usually returned to normal. Two injections are given each week, so that a full course takes six weeks, during which time the patient is kept in bed but is encouraged to occupy himself, which I think is an all-important factor. In the large number of injections that have been given in these hospitals not one case has shown the slightest inflammatory local reaction; the only complaint heard is of stiffness in the muscles into which the sulphur has been injected, but this passes off in a few days' time. It is advisable to warm the oil before using it, as it will then flow through the needle more easily. A three-inch needle is the most convenient to use.

In a few cases I have given a second course of 12 injections after an interval of about two months, but in no case has any further improvement been shown in the mental state.

Reaction.—When the temperature begins to rise the patient usually starts to sweat, loses his appetite, and in a few cases has become delirious, but these symptoms have never given rise to any real anxiety. In all cases there is a marked leucocytosis, and in one patient the white blood count rose to 73,600 at the height of his fever. The extent of the leucocytosis appears to give no indication of the ultimate prognosis. The liver does not seem to be affected by the sulphur, as there have been no cases of jaundice, and in every patient the van den Bergh reaction has been negative. The mental reaction has varied. One or two patients have definitely stated during their course of treatment that they thought the injections were doing them good and have asked for further treatment; others have lain like logs during the whole of the six weeks, whilst others have passed gradually from a world of phantasy to a world of reality but have needed constant guidance in their new world. It is of great importance to attempt to re-educate these schizophrenics on the days that their temperatures are normal during their course of treatment, and I think the good results obtained have in no small way been due to the interest and trouble that has been taken by the nursing staff.

One patient ran a temperature up to 102° F. for

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[1] The Lancet, 1929, ii., 1081.

MEDICAL SOCIETIES

MEDICO-LEGAL SOCIETY.

AT a meeting of this Society on Jan. 22nd Sir WILLIAM WILLCOX took the chair, and Dr. NATHAN RAW read a paper on

The Coroner's Verdict in Cases of Suicide.

The word "suicide" had, he said, first been used in 1736 by Hales, author of "Pleas and the Crown." In English it was almost always used in a criminal sense, and in law felo-de-se and suicide were one and the same thing, although an attempt to commit suicide was not an attempt to commit murder but a common-law misdemeanour which could be tried at the quarter sessions. Under certain social codes and in certain circumstances suicide had been honoured, but in Anglo-Saxon times it had been regarded as a crime against God and the church; a verdict of felo-de-se had meant that the suicide's goods and lands would be forfeited, the widow would lose her dower, and the body would be buried in some public highway with a stake through it. Now that these penalties had been modified, Dr. Nathan Raw argued, the word "suicide" should be expunged and the verdict should be "did feloniously kill himself," except on those rare occasions when there was sufficient evidence for the jury to add "not being of sound mind." The phrase "committed suicide whilst temporarily insane" was a contradiction in terms, for "to commit" in this sense meant "to be guilty" of a crime, which was impossible for an insane person. The suicide-rate in England was 9 per 100,000, but the number was steadily increasing, though there was a great decrease in the number admitted to prison for attempted suicide.

Mr. LLEWELLYN JONES said that if coroners kept to the letter of the law they would have in most cases to direct the jury to return a verdict of felo-de-se. One of the most useful of enactments was that which allowed a coroner to conduct an inquest without a jury. The coroner should sympathise with the friends and relatives and avoid returning a verdict which would cast a stigma on the family. The verdict of felo-de-se could have no deterrent effect. Publicity, especially for letters found on the deceased and the manner in which the act was committed, was most undesirable, for it victimised defenceless persons and induced unstable individuals to imitate the suicide. Attempted suicide had decreased, but successful suicides had increased, relatively and absolutely. Much could be done to reduce suicides by enforcing the restrictions on the sale of dangerous drugs.

Dr. MORGAN FINUCANE maintained that most suicides were due to melancholia and allied states, usually characterised by delusions. In disagreement with Dr. Raw, he preferred the verdict of "unsound mind," which, though perhaps not legally correct, was humane. He advocated in cases of attempted suicide a verdict of "guilty but insane," and the detention of the prisoner for treatment, for many melancholic patients repeated the attempt.

Dr. E. F. HOARE, coroner for the Lewes district of East Sussex, cited the case of a governess who had committed suicide because her fiancé could not afford to marry her. He thought that the man had acted reasonably and sensibly and that the girl's mind had become unbalanced. He had, he said, directed the press to withhold the name of the man, who had actually not heard of the suicide. When compelled to read letters, he restricted himself to extracts which threw light on the mental attitude of the deceased. Coroners were hampered in returning a verdict of felo-de-se by the uncertain attitude of some insurance companies; juries were apprehensive lest they should deprive the widow of her benefit. He doubted whether a coroner sitting without a jury could return a verdict of felo-de-se. Juries were apt to return the verdict of "unsound mind" in cases where the coroner might almost consider the act reasonable—as in the suicide of a victim of rodent ulcer—and to return felo-de-se in cases where the medical eye saw unmistakable signs of mental illness. He had great hope that the Mental Treatment Act would reduce the number of suicides by facilitating early treatment.

TRUTH THE BEST GUIDE.

Dr. LETITIA FAIRFIELD said that in the old days when a family would sooner be branded with a crime or insanity than with a sin, the "unsound mind" verdict might have been preferable, but that nowadays families dreaded the stigma of transmissible illness. She had known cases in which a verdict of "suicide while of unsound mind" passed an unjustifiable and deleterious slur upon the hereditary mentality of a family, and in which children had grown up overshadowed by the fear of insanity although the suicide of the parent might have had, to a humane observer, a reasonable motive. Truth was probably the best guide in this matter. She considered that the coroner ought to say more about the mental state of a deceased who had exhibited undoubted text-book symptoms of insanity which had been ignored by the friends and relatives; for instance, when the deceased had been placed in a nursing home under wholly inadequate care instead of being given mental treatment. This was a definite evil which was responsible for many unnecessary deaths every year; she hoped that the Mental Treatment Act would abate it. The "suicide pact" was often associated with most pitiable circumstances and the survivor had often been punished sufficiently. Nevertheless, it was sometimes employed to rid the accused of an insoluble tangle, and the penalty could probably not be safely abolished altogether.

Dr. DORIS ODLUM regretted that the law had taken such a Draconian point of view. It imposed penalties upon the body of the offender after his death in much the same way as a child punished its toy for being

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some four weeks after he had finished his course. Mentally he showed marked improvement, and no physical signs could be discovered. He complained of nothing, and so a war-time diagnosis of P.U.O (pyrexia of unknown origin) had to be attached to his case-sheet.

Although it is recognised that cases of dementia præcox have periods of remission, during which they are well enough to return home, I think it is justifiable to try the sulphur treatment on all new cases, for no harm is likely to occur and in many cases progressive dementia may be prevented or at least hindered.

I am indebted to Dr. F. R. P. Taylor and Dr. Norcliffe Roberts, the medical superintendents of the hospitals mentioned, for kind permission to record the results of my investigations, and to Dr. Geoffrey Shera, pathologist to the East Sussex Hospital, for his help in performing the various laboratory tests.

broken. The only other explanation was that the penalties were meant to be deterrent, but no evidence existed that purely retributive measures ever deterred anybody. The State had therefore reached an impasse where the public were taking the view that a man had more or less of a right to kill himself if he wished to, and that it was wicked to visit his act upon his unfortunate relatives. Coroners' juries were therefore placed in the position of having to say what they really did not believe. Persons who attempted suicide were nearly always victims of profound emotional imbalance, though they were not always deluded, and it was reasonable to suppose that this generalisation applied also to persons who succeeded. Survivors should be treated, not punished. Fortunately, the Home Office directed the police to proceed very leniently in cases of attempted suicide, and a charge was not often made if it was possible to place the survivor under care. It was necessary to revise drastically and publicly the ideas underlying the legal attitude to suicide.

Dr. **Bentley Purchase** agreed that "suicide while of unsound mind" was a contradiction in terms, and stated that neither he nor Sir Walter Schroeder ever used the term "suicide" officially. It was not used on the official forms. A coroner sitting alone could not return a verdict of felo-de-se and was therefore inclined to seize upon evidence of earlier mental trouble.

Dr. **Knyvett Gordon** suggested that gas companies should make their gas too obnoxious to be used as a means of self-destruction.

Mr. W. F. **Chadwick** pleaded for the institution of a verdict of "justifiable homicide."

Mr. C. G. **Moran** pointed out that insanity and unsoundness of mind were not the same thing. There was a legal definition of insanity and there might, for all he knew, be a medical one, but he had never yet known anybody to be of perfectly sound mind. The question was primarily one of policy, and a verdict of unsoundness of mind truthfully covered such states as emotional imbalance, hopelessness, and worry.

Dr. **Temple Gray** suggested the verdict "did kill himself when suffering from mental illness," which would include all but felonious suicide.

The **Chairman** deplored the ease with which educated persons could still obtain drugs of the barbituric acid group. The prevention of suicide was a matter for the psychiatrists, who should educate the public.

Dr. **Nathan Raw** replied.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ODONTOLOGY.

At a meeting of this Section held on Jan. 26th the chair was taken by Mr. **Carl Schelling**, the President. Dr. A. A. **Osman** read a paper on the

Importance of Sugar in the Diet of the School-child.

The amount of sugar required by children of school age, had, he said, long been a matter of dispute. There was an almost universal craving among children for sweet things, suggesting an underlying physiological need, but there seemed to be some evidence of ill-effects from excessive consumption. The most important possible danger was damage to the teeth, and most of the objection to sweets had come from the dentists. Dr. Osman thought that the pendulum had been allowed to swing too far and that not a few children were suffering from relative sugar starvation. The young child was ceaselessly active during waking hours. Every little thing it did was done with its whole body and mind, and the output of energy was enormously greater than that of an adult. Clearly, then, an adequate supply of readily assimilable and easily combustible fuel was of great importance. The primary fuel of muscle was carbohydrate, and immediate needs were best met by the simpler types, the mono- and di-saccharides; the more complex poly-saccharides were used to replenish stores at leisure. Did not the child's craving for sweets arise from this very fact?

The symptoms of sugar deprivation could be divided into major and minor; the major symptoms were "bilious attacks" or "cyclical vomiting," which occurred between the ages of 4 and 13 and consisted of attacks of sickness with headache, fever, anorexia, and muscular prostration. There was usually constipation, sometimes succeeded by diarrhœa. There were three common causes: mental excitement, infection, and physical exhaustion, all factors making a rapid demand upon sugar reserves. A low blood-sugar was not the rule; rather the blood-sugar was maintained at a normal level at all hazards, only falling when the glycogen reserve of the liver was used up. Most bilious attacks were of this nature, and over 30 per cent. of children suffered from them. The minor symptoms of sugar shortage could be summed up in the word "fatigue." The child looked physically and mentally exhausted, pale, languid, depressed, with dark rings under the eyes, expressionless face, and listless stance. Such children were usually brought to the doctor for anæmia, headaches, flabbiness, fainting, constipation, "growing pains," or asthma. In many the symptoms had been aggravated by the provision of extra milk. Many had parted with their tonsils and not a few with their appendices, and artificial sunlight had been prescribed indiscriminately. All these symptoms cleared up when the sugar allowance was increased, and the gain in health and spirits was enormous.

A considerable proportion of the hospital class seemed to be suffering from some degree of acidosis, and apparently the importance of ketosis as a cause of symptoms in childhood had been unduly exaggerated. Certainly, neither ketosis nor hypoglycæmia was the constant biochemical abnormality in the subnormal child; acidosis was the condition found, and it disappeared when the sugar in the diet was increased.

No rules could be laid down for the amount of sugar required; it depended on the individual child. General directions to cut down fat and increase carbohydrate did not usually suffice; sugar must be supplied actively. Glucose had the advantage that it could be given as a medicine. The following prescription had been found successful in preventing attacks of cyclical vomiting in highly strung children: at all meals three to four teaspoonfuls of sugar per cup of weak tea or small glass of lemonade, a sandwich of bread and butter thickly spread with Demarara sugar and a similar sandwich at bed time; plenty of syrup, honey, and jam and fresh fruit; limited fat and milk; powered glucose in lemonade between meals, or boiled sweets, toffee, and candy without stint. Except diabetes, and possibly some cases of diarrhœa, Dr. Osman knew of no illness in childhood made worse by the addition of sugar to the diet, and was convinced that an enormous amount of chronic misery and ill-health could be prevented if we were more willing to learn from the child than to teach him.

DISCUSSION.

Mr. F. W. BRODERICK agreed that an increase of sugar did not cause caries but cured it and improved the child out of all knowledge. He inquired whether Dr. Osman gave alkalis, and, if so, whether he gave them on an empty stomach so as not to upset the acidity of the gastric juice and prevent calcium absorption. He also asked how Dr. Osman treated the spots which came out as the result of sugar feeding.

Mr. W. L. BULLEID said that the idea that sugar could be held in solution against the teeth would not survive a moment's thought. He had habitually prescribed boiled sweets and glucose, which never did any harm and reduced susceptibility to caries, which was endogenous. Sugar was sometimes a wonderful prophylactic for the type of child whose nervous reactions made him a pest before, during, and after a party. Dental surgeons made the mistake of not differentiating sufficiently clearly between pure, soluble sugar and sticky sweets such as toffee and chocolate, which contained fat and adhered to the teeth. Boarding-schools were often to blame for sugar shortage in their dietary and for their restrictive regulations. Adults who suffered from travel sickness often benefited from doses of barley sugar.

Mr. G. T. HANKEY inquired whether there was any relation between calcium deficiency and sugar deficiency.

Dr. KINGSTON BARTON declared himself wholly on the side of the dental surgeons; he thought the mouths and stomachs of our children were being demoralised by sweets. The beet sugar which was so much used nowadays was much more deleterious than cane sugar. Sugar should be given in the form of food, but there should be an absolute taboo against sweets eaten promiscuously. The French knew the value of eau sucrée against thirst and fatigue, and explorers in all climates relied largely on sugar. Glucose was not a good form in which to give sugar, because it was likely to be impure. White sugar tended to constipate and brown sugar to relax, and a balance should be struck between the two.

Dr. R. P. GARROW doubted whether beet sugar was inferior to cane sugar. He inquired what Dr. Osman meant by extra milk and underfed children. The children who drank extra milk in the morning under the scheme of the National Milk Publicity Council benefited very greatly. No one could say what constituted a balanced diet, but milk was said to have a balancing effect.

Mr. A. T. PITTS said that the dental surgeon should adapt his views on dietetics to the general nutritional requirements of the child, but that dietitians should take account of some of the prevailing views on oral hygiene. He inquired whether Dr. Osman disagreed with the work of Dr. Corry Mann on children fed with milk. It was better to prescribe glucose than to allow the child to help himself to boiled sweets when he wanted to. He doubted the wisdom of giving children sweet sandwiches just before sending them to bed.

Mr. R. E. RIX inquired whether glucose ever produced epileptiform attacks in children with no previous history of fits.

Dr. E. W. FISH maintained that caries was an hereditary condition; it always occurred on the contact points of the teeth in permeable faults of the enamel, and not in spots which might have been affected by vitamin deficiency. Although accelerated by fermentable carbohydrates, it would occur in any event.

Mr. J. G. TURNER suggested that the real cause of much caries might lie in focal sepsis, especially of the nasal sinuses. Disease of the intestinal tract might produce an excess of carbohydrate in the diet by interfering with the digestion.

Mr. D. M. SHAW said that in children who normally did not get enough carbohydrate an addition of sugar to the diet was definitely beneficial.

The PRESIDENT remarked that certain races who ate no sugar had good teeth, but that Irish peasants developed bad caries on butter-milk and oatmeal. He had chewed sugar-cane as a child in Cuba, but had had no caries until his twentieth year.

Dr. OSMAN replied that alkalis had produced no results in acidosis, and that spots went away again if more sugar was given. Some children could not deal with an extra glass of milk in the morning unless it was balanced by a corresponding amount of sugar. He suspected that asthma and bilious attacks had increased in Dr. Corry Mann's children. Skimmed milk was as beneficial as whole milk. Fits caused by sugar must be very rare. Nasal sinusitis was not often seen in the out-patient department.

CASUAL COMMUNICATIONS.

Mr. J. E. CURNOCK described and illustrated by slides a cyst of the mandible which had occurred in a man who had been edentulous for 14 years before any clinical signs had appeared, and which was therefore probably not odontogenic; it might possibly have arisen from the ramus of the first branchial arch.

Mr. HANKEY described an unsuccessful attempt at replantation of two central incisors in a schoolboy. The teeth had been recovered immediately and placed in a solution of thymol for a few minutes before replantation, but in spite of the careful coöperation of the patient, and although X rays had shown no change for four months, osteoclasia had eventually set in.

Mr. TURNER said that he had succeeded in replanting teeth even after boiling them.

Mr. H. A. KENSHOLL suggested that infection had existed from the beginning but had not produced sufficient decalcification to show on an X ray film.

Mr. G. C. FRIEND inquired the most suitable solution to use in such cases.

Mr. HANKEY replied that sepsis had probably existed, but must have been very low grade. The solution used must not be too strong. Thymol was the correct drug to use, but the effervescent thymol tablets had probably been too weak.

SECTION OF MEDICINE.

AT a meeting of this Section on Jan. 27th Dr. R. A. YOUNG, the President, took the chair, and a paper on the prognosis and treatment of

Heart Disease Complicating Pregnancy

was read by Dr. CRIGHTON BRAMWELL (Manchester). In opening Dr. Bramwell remarked that the information on this subject in most current text-books was neither adequate nor up to date. One reason for this was that the obstetrician could hardly be expected to keep in touch with all the recent advances in cardiology, while the cardiologist, on the other hand, did not often have a chance of making a satisfactory study of these cases. He was often asked advice about treatment, or to give a prognosis, but he did not have the opportunity of supervising this treatment; often he did not hear whether his prognosis was correct, and there was nothing so disastrous to progress as ignorance of one's mistakes.

The important question was whether, in the face of heart disease, the pregnancy should be allowed to run its course. (1) What was the immediate additional risk due to heart disease? (2) Would pregnancy and labour impair the woman's future health, by causing a permanent aggravation of the cardiac disability? If it were decided that the pregnancy should be terminated, how and when should that be done? During the last three years, at St. Mary's Hospital, Manchester, Dr. Norah Regan and he had been watching cases of heart disease through their later weeks of pregnancy, their labour, and the ensuing puerperium, and had been examining them at intervals afterwards to see whether the heart showed evidence of further damage consequent on the pregnancy. This paper was based mainly on 82 unselected cases showing all grades of heart disease—i.e., every patient attending the hospital during 18 months was examined for heart disease, and 79 were the result of examining over 3000 women at the antenatal clinic with three admitted as emergencies who had not been to that clinic. Being unselected this series approached the scientist's idea of a "clean experiment." Each woman was questioned as to any troubles in the present or previous pregnancies, especially as to congestive heart failure, with engorgement of the veins in the neck, enlargement of the liver and œdema of the feet, and cardiac enlargement. A six-foot X ray film of the case was studied, also the rhythm recorded. The patient was then brought at intervals of 14 days for examination during the remainder of the pregnancy. Particulars of her progress through labour, and any signs of cardiac distress were recorded by the obstetric officer in charge of the case and the speaker or his colleague saw the patient in St. Mary's Hospital at some time during the puerperium. The woman was asked to come for re-examination a month after the confinement, and thereafter every three months. Those who did not so report were visited in their homes. Owing to changes of address, he had lost sight of 12 of the 82 cases.

Ætiology.—In the 82 cases the ætiology was as follows: rheumatic fever, 20; chorea, 17; rheumatic fever and chorea, 10; patients who had had "rheumatism," 11; tonsillitis and growing pains, 11; mitral stenosis but no rheumatic history, 9; congenital lesions, 3; congenital heart disease in which there were no heart murmurs, 1. The severest cases were those who had had symptoms of heart disease prior to the onset of the pregnancy. Eleven of the women had bronchitis (in four it was of recent origin, seven of old standing). In three the bronchitis was an aggravating factor in the patient's cardiac condition. Strange to say, only 5 of the 82 cases had hæmoptysis. Two of these who had aortic incompetence in addition to mitral stenosis had been in poor health ever since the confinement. Hay and Hunt had a series of cases which showed 30 per cent. of hæmoptysis during pregnancy. Mitral stenosis was found in 67 cases, this being accompanied in 7 by aortic incompetence. Mitral incompetence was diagnosed in 10 cases in which there was a definite rheumatic history and a loud systolic murmur in the region of cardiac impulse. One of these women subsequently developed renal toxæmia and so was delivered prematurely at the thirty-second week. None of the fatal cases had aortic incompetence. In six cases there was definite evidence of a fully developed congestive heart failure; three were admitted as urgent heart failure cases who had not been to the antenatal clinic. Two of these last-named six patients died, three had been in poor health since their confinement, their condition having been aggravated by the pregnancy, while only one of the six had done well. In five of the six cases the heart failure was not accompanied by auricular fibrillation; they were cases of failure with normal rhythm, contrary, therefore, to what was usually found in cases of rheumatic heart disease. Six patients gave a history of having suffered from œdema as well as dyspnœa prior to pregnancy, and they were expected to develop congestive heart failure during the pregnancy in which he and his colleague observed them. That proved true, however, in only two of the cases. It was difficult to account for the fact that in six patients who had heart failure when seen only two gave a history of having had it prior to the pregnancy, whereas of six with a positive history two only developed heart failure. There were two possible explanations: (1) that the œdema of the feet of which the patients spoke might not have been of cardiac causation; (2) that the patients were not closely cross-questioned, and they might have forgotten that they had had œdema, hence the heart failure might really have been the second attack.

Fibrillation was the most grave of the cardiac disorders associated with pregnancy; Leyland Robinson, of Liverpool, published 18 cases of fibrillation, of whom 13 died, but 8 of the 13 had signs of congestive heart failure and were not under antenatal supervision, nor did they receive hospital treatment during their pregnancy. Hay and Hunt had four cases of fibrillation in their series with one death. Forty-three of the cases were delivered at full term, 25 prematurely (eight of them prior to the thirty-seventh week), induction was carried out in 12, and in two Cæsarean section was done.

Fatal cases.—Of five cases which died the first was a primipara aged 28, who was admitted to hospital because of hæmoptysis, and had a pulmonary embolism three days after her confinement; she had had dyspnœa and hæmoptysis prior to the confinement, and low blood pressure—namely, 100 systolic. The second was admitted as an urgent case because of heart failure. She developed fibrillation at the thirtieth week, and died from septic complications. The third was also admitted as an urgency with heart failure, and was delivered the day following admission, in her thirty-second week. She had had frequent attacks of acute pulmonary œdema both prior to and after confinement, and died from it six weeks after confinement. The fourth case was a primipara aged 21, who had heart-block, and died apparently of failure of the peripheral circulation, immediately after labour. The last case was that of a woman who had already borne 13 children, and she declined to carry out instructions and suggestions; she, indeed, seemed to have no wish to live.

Of the 66 cases of the series with whom contact had been maintained, and who were seen at intervals of from three months to two years, 27 had been free from symptoms since pregnancy, 36 stated that though they had now dyspnœa on exertion, it was no worse than prior to the pregnancy; in three the cardiac condition had clearly been aggravated by the pregnancy.

Deductions.—When definite œdema, enlargement of liver, moist sounds at the base of the lungs were present, one must expect trouble in the pregnancy; the same was true of patients with auricular fibrillation. Trouble was looked for in 13 of the 82 cases, but it was actually encountered in only eight. Five of those died, in three the heart trouble was aggravated. On the whole, it could be said, as a result of the study, that the prognosis of heart disease complicating pregnancy was less gloomy than it was often held to be. Another feature was that the valvular lesions in this series had afforded no prognostic help; it seemed immaterial whether one was dealing with mitral regurgitation, stenosis, or aortic incompetence—i.e., as to whether the prognosis was good or bad in those cases. Most writers had laid grave stress on cardiac enlargement, and in his experience people who had large hearts did worse than did those whose hearts were not enlarged; several of his cases with cardiac enlargement, however, did well, though, on the other hand, three with enlargement were among the fatal cases. One could not, in dealing with prognosis, leave out of consideration extraneous circumstances; the woman in good circumstances would have little additional work thrown on her because of the child, but it was far otherwise with the poor.

Treatment.—The physician should, Dr. Bramwell thought, forbid pregnancy in cases in which there had been definite proved congestive heart failure in the past; also in the case of patients who had auricular fibrillation. Apart from the heart failure, there was a danger that they might get a cerebral or a pulmonary embolus. If the cases were not seen in time to warn against pregnancy, if seen early in the pregnancy the uterus should be emptied; or later still, Cæsarean section should be done. But emphatically the first thing was to treat the heart failure, and irrespective of the pregnancy. In less severe cases the patients should have prolonged rest and other precautions must be taken, then a labour could be successfully negotiated which might otherwise have been fatal.

DISCUSSION.

Dr. L. J. WITTS spoke of the frequency with which women with congestive heart failure died in labour of septic complications. He had even heard of women in labour with this heart trouble unexpectedly dying of tetanus, and he wondered whether Cæsarean section was advantageous on that account also.

Dr. C. MOIR also wondered whether, for these heart cases, spinal anæsthesia was best; in his own experience of such cases it had proved satisfactory. Many obstetricians said there was real danger if the child was born before the placenta was delivered, the idea probably being the sudden diversion of a large volume of blood from the uterine into the general circulation, so that there was a liability to sudden death at that stage. Therefore, it was advised that on no account should delivery of the placenta be hurried, one or two hours being allowed if necessary before the placenta was expelled. In such difficulty should not venesection be done?

Dr. WILLIAM EVANS expressed his surprise at the low incidence of auricular fibrillation in this series of cases; John Parkinson's series gave a considerably higher incidence. Many authorities held that the heart did not enlarge in acute congestive failure; the fact that the apex-beat shifted upwards might be due to the enlargement of the liver.

Dr. OLIVE RENDEL said that in a series of 200 cases which she had studied, not more than four had auricular fibrillation. Most of her cases were those of mitral stenosis, with or without aortic reflux. In that series there were four deaths, none of them due, except one, to auricular fibrillation, and that one had also malignant endocarditis. Two of her cases went into fibrillation after delivery. She asked what was Dr. Bramwell's prognosis in cases of hæmoptysis; her own view was that even a small hæmoptysis, certainly when repeated, constituted an indication for the termination of the pregnancy.

The PRESIDENT said he had been impressed by the way in which cases of heart disease weathered pregnancy and delivery Recently, there was admitted to his ward after delivery, a woman who had signs of congestion, mitral stenosis, and cerebral embolism. She developed some fever, and eventually died. She was found to have unsuspected right-sided infective endocarditis.

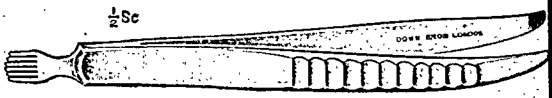
REPLY.

Dr. BRAMWELL said that Cæsarean section had the one great advantage that it could save the patient from the last month of her pregnancy, the worst time, and one could regulate the blood loss. With regard to anæsthetics, Mackenzie used to say there was nothing like chloroform for these cases, as he had no trouble with it, and the speaker thought there was still something in the advice. He would hesitate to agree to spinal anæsthesia in a case with a systolic pressure of only 100 or 105, but his practice was to leave the anæsthetic to the discretion of the administrator. He had not had experience of trouble due to quick delivery of the placenta. Fibrillation was liable to occur at any time in an old-standing case of mitral stenosis. When there was dyspnœa and heart failure seemed to be impending, the patient was brought into hospital for a period of rest and treatment, and with very satisfactory results.

NEW INVENTIONS

COMB DISSECTING FORCEPS.

THE comb dissecting forceps shown in the accompanying illustration has been made to my design. The comb end is rigid and the blades flexible. It embodies the principle of the well-known "Kelly's comb," and is most useful in performing the radical operation for cancer of the breast. After the fascia has been divided along the front of the axillary vein with a light touch of the scalpel, the forceps is held in the reverse position and the comb sweeps the axillary contents away from the posterior aspect of the vein commencing at the apex of the axilla. Branches of vessels and nerves are displayed at their origin and clamped or preserved as desired. The proximity of the comb to the handle enables this to be accomplished with ease and precision. I have found the forceps useful for similar types of blunt dissection elsewhere, especially for stripping fascial or omental structures away from vessels, pedicles, ducts, and the necks of hernial sacs. The blades meet at the point only. The instrument serves the double purpose of dissecting forceps and Kelly's comb, so that one instrument less need be taken to a breast operation.



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Northampton.

REVIEWS AND NOTICES OF BOOKS

Sir D'Arcy Power's Selected Writings, 1877–1930.

Oxford: Clarendon Press. 1931. Pp. 368. 25s.

THIS handsome volume is made up of 16 selected essays and addresses by Sir D'Arcy Power, and its publication has been arranged by a group of friends to mark the occasion of his seventy-fifth birthday, which occurred in November, 1930. For more than half a century Sir D'Arcy has used his pen to forward and foster medical knowledge along many lines, technical, clinical, historical, and biographical, and the bibliography appended to the book ranges in the matter of dates from 1887 until to-day, containing more than 600 headings. Such a mass of material has required close sifting in order to reduce it to a reasonable size, and, while no doubt much has thus been eliminated which well deserved reprinting, there remains a series which is compact of wisdom and information delightfully conveyed, and which justifies an important manner of permanent record. The bibliography testifies to the number of baskets in which Sir D'Arcy Power has put his eggs, but the articles selected for reprinting have appeared mainly in the *British Journal of Surgery*, the *Proceedings* of the Royal Society of Medicine, and the *St. Bartholomew's Hospital Gazette*. Two of the articles, forming public orations, have appeared in full in THE LANCET, while others will have had their origin in or sustenance from the author's frequent contributions to the *British Medical Journal* upon medical history. Again the many and short biographies from Sir D'Arcy's pen of members of the medical profession, whose careers have warranted inclusion in the Dictionary of National Biography, will have been drawn upon to supply the wealth of historical detail displayed, though none of them is here in extenso.

The selected essays include the Hunterian Oration, delivered before the Royal College of Surgeons of England in 1925; a brilliant account of Harvey as a traveller contributed to the Historical Section of the Royal Society of Medicine; a documented history of the first 100 years of the Royal College of Surgeons, which appeared in a short-lived medical weekly entitled *The Physician and Surgeon;* and an address on the early origins of surgery in the United States, in which the connexions between the American pioneers and the science of the mother country is set out. These four papers illustrate well the accurate knowledge upon which Sir D'Arcy has built up his literary constructions and the graceful style with which they are adorned. Again, no better method of ascertaining what the medical profession has stood for, while the last five centuries were going by, could be suggested than the reading of such a story as the Vicary Lecture, delivered at the Royal College of Surgeons of England. Here is described the education of a surgeon when Vicary, in virtue of age and position was foremost, as the author points out, amongst a band of pioneer surgeons in the reign of Henry VIII. who desired to see their calling advanced from a trade to a profession. In this essay will be found notes upon the system of apprenticeship which prevailed with the Barber Surgeons Company at the time and for a further 250 years, and a short reference by the author to the abuses which at the end of the eighteenth and beginning of the nineteenth century brought the system into abuse, shows what a powerful incentive it formed to the reforming energies of Wakley and his coöperators when founding THE LANCET.

Other chapters of interest to all who would follow the evolving history of medicine—a study whose importance is receiving to-day more attention—are that on the Diaries of the Rev. John Ward, once the treasured possession of the Medical Society of London; that on the condition of Pepys's eyesight which led him suddenly to discontinue his journal; a learned presidential address delivered before the Section of Comparative Medicine of the Royal Society of Medicine, in which, among many other things, will be found an interesting note on William Kitchen Parker; and two papers dealing with episodes in the history of St. Bartholomew's Hospital.

This is a good book, containing much learning put lightly.

Die Chirurgie.

Edited by Prof. M. KIRSCHNER (Tübingen) and O. NORDMANN (Berlin). 1930. Berlin and Vienna: Urban and Schwarzenberg. Vol. II., Fascs. 26 and 29. M.18 and M.16. Vol. III., Fasc. 27. M.14.

THE section of this great work which describes the surgery of bones is written by Dr. Leopold Schonbauer, of Vienna. The physiology and structure of bone is first considered and then what is called the biology under which heading is included such general changes as osteoporosis and osteosclerosis. The chief value of this part of the book is that it describes a great deal of work which has been done upon the general pathology of bone and gives full references. The account is rather bewildering, since the author does not give a critical survey of what is known at the present day of the different subjects; but all the same the student bent on mastering the subject would find it difficult to discover a better guide to his reading than is here presented. The rest of the book describes the various diseases of bone and also fractures. It reaches a high standard and deserves praise, but there are some omissions. For instance, W. Orr's treatment of septic compound fractures is not described, though it was published five years ago, and some of the latest work on the relation between the parathyroids and osteitis fibrosa is not very fully dealt with. Some extraordinary illustrations of patients complete a very fine collection of pictures of rare bone diseases.

In Fasc. 29 Dr. A. Winkelbauer (Vienna) describes operations upon bones and joints. He gives a straightforward account of operations on these structures, including many very rarely performed, at any rate in this country, such as the Wladimiroff-Mikulicz osteoplastic resection of the ankle; but we could find no descriptions of the commonly performed subastragaloid and midtarsal arthrodesis, or of cuneiform resection for inveterate talipes equino-varus. In removal of the internal semilunar cartilage of the knee the author sees no objection to severance of the internal lateral ligament. He apparently holds that complete excision of the meniscus is necessary, in this respect departing from the teaching of English surgeons, who have probably had more experience of this injury than anybody in the world. Bone grafting is not very thoroughly dealt with. The illustrations are as good as in the other sections of this system of surgery.

Vol. III., Fasc. 27, is devoted to a complete monograph on the surgery of the spinal cord and its membranes, by Dr. E. Heymann (Berlin). The work is extremely well conceived and carried out. Anatomy and physiology as the basis of neurological diagnosis are fully described in the first chapters and are followed by accounts of the various pathological conditions amenable to surgery. The neurological surgeon who seeks information on some points in the technique of diagnosis or operation, or desires to know the results of chordotomy or posterior root resection or other intervention will not be disappointed if he consults Dr. Heymann's book. Here again the illustrations are well selected and well drawn.

Tuberculous Intoxications.

By JOSEPH HOLLOS, M.D., Pathologist of St. Vincent's Hospital, Staten Island, New York. Edinburgh: E. and S. Livingstone. Pp. 132. 10*s.* 6*d.*

THIS book is an enlargement of the author's earlier book on "The Tuberculous Intoxications," published in Budapest in 1909. It is based upon the work of Carl Spengler on cellular immunity, the patients being treated with very weak dilutions of immunity substances extracted from the washed red blood corpuscles of immunised animals. The book has chapters devoted to symptoms of tuberculosis such as endocrine disturbances, neurasthenia, rheumatism, dysmenorrhœa and other menstrual disturbances, gastric and intestinal disturbances. We fear that clinicians are not likely to endorse a large number of the statements made therein; for example, "In the vast majority of cases rheumatic arthritis is nothing but one of the masked forms of concealed tuberculosis," and "The greatest part of menstrual disorders are of tuberculous origin, and they can be completely cured, or, at least, ameliorated through specific antituberculous treatment." A large series of cases is given which the author has treated with immune blood by Spengler's method.

Children of the Covered Wagon.

Report of the Commonwealth Fund Child Health Demonstration in Marion County, Oregon, 1925–1929. By ESTELLA FORD WARNER, M.D., and GEDDES SMITH. New York: Commonwealth Fund Division of Publications. 1930. Pp. 123. $1.

Cross-Sections of Rural Health Progress.

Report of the Commonwealth Fund Child Health Demonstration in Rutherford County, Tennessee, 1924–1928 (HARRY S. MUSTARD, M.D., Director, Rutherford County Demonstration). New York: Commonwealth Fund Division of Publications. 1930. Pp. 230.

IT is the policy of the Commonwealth Fund to inaugurate and conduct for a limited period in any district some service which appears to be needed there, with the object of demonstrating that need and how it can be met. In pursuance of this policy an intensive campaign for the betterment of health in Marion County, Oregon, U.S.A. was carried on during the years 1925 to 1929 inclusive. In a little book Dr. Warner and Mr. Geddes Smith describe the procedure adopted by the Fund, the staff and equipment required to carry out the scheme, its total cost, and the apparent effect of the efforts. The machinery set up was that which would be regarded in this country as the normal organisation of a progressive rural area, including medical staff, dentists, inspectors, nurses carrying out the duties of school nurses and health visitors, and the necessary clerical assistance. Special attention was devoted to the care of expectant mothers and young children, and an intensive and successful campaign was conducted in order to induce the public to accept immunisation against diphtheria. All this is described in popular language. The book is beautifully produced and contains a large number of admirable photographic illustrations. For the guidance of those who are specially interested in public health administration, tables showing the movement of various case-rates and death-rates in the county during the ten years, 1920 to 1929, are included in an appendix. These figures show that the mortality due to childbirth, the infant mortality (and notably the neonatal mortality), the mortality from most of the communicable diseases and the incidence of the latter have declined to a greater extent during the period than they have in the State of Oregon and in the United States registration area generally. The record of this work should be a stimulus to the health authorities of similar areas in America and throughout the world. That it has proved so locally is evidenced by the fact that the organisation is being officially carried on now that the work of the Commonwealth Fund is done.

The second book is also the result of a demonstration carried out in a rural area by the Commonwealth Fund. In this instance it was conducted for five years ending December, 1928, in Rutherford County, Tennessee. The same objects were aimed at as in Marion County, Oregon, and a similar procedure was adopted. The results appear to have been equally successful and the demonstration has had the effect not only of persuading the county health department to carry on the scheme out of public finances, but also of stimulating the public health programme of the whole State.

Therapeutic Uses of Infra-red Rays.

By ANNANDALE TROUP, *M.C.*, M.B., Ch.B. With foreword by Sir WILLIAM WILLCOX, K.C.I.E., C.B., C.M.G., M.D. London: The Actinic Press, Ltd. 1930. Pp. 57. 5*s.* 6*d.*

THIS small volume is not a text-book, but is a clear elementary exposition of infra-red therapy, written for his colleagues by a general practitioner. It will be found useful by those not acquainted with the principles of radiant heat therapy, who require an introduction and practical help in choosing apparatus. The treatment of the subject is elementary throughout and there are few references to the literature.

Dr. Troup has had some years' experience of infra-red therapy and is an enthusiastic believer in this form of treatment. In his experience the relief of pain was one of the most constant and gratifying results of its application. Improvement was noted in cases of chronic rheumatism, rheumatoid arthritis, neuritis, and in acute local inflammatory conditions such as boils and carbuncles. It would be of interest to compare the improvement observed in the nutrition and function of paralysed limbs after infra-red irradiations with that noted after treatment with the diathermy current. A comparative series of cases would be of especial value. On theoretical grounds it seems doubtful whether the superficial heating of the tissues obtained by infra-red irradiation is likely to give results as good as those obtained by diathermy.

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with rapid plate changers, will probably be unsatisfactory, showing a different degree of filling in the vessels in the two films. Asepsis demands an efficient X ray apparatus in the surgical theatre, and each side must be separately injected. In the field of interpretation there are also limitations. The arteries shown include the stem of the internal carotid and the middle cerebral of one side only. The anterior cerebrals are rarely well seen, and the posterior cerebrals are, of course, supplied by the vertebral arteries, and therefore invisible. It is, therefore, to be expected that only frontal, fronto-parietal, and temporal lobe tumours, which are relatively easy to find by other methods, will reveal their presence by displacement of the vessels concerned. The side of the lesion must previously be determined if double injection is to be avoided, and the method can give no answer to the important question whether the lesion is supra- or infra-tentorial. Ventriculography, which allows a more leisurely and methodical investigation, provides an answer to many of these questions, and also gives valuable indications at the actual operation; so the new method will probably supplement rather than supersede it. Used alone, it might, moreover, give erroneous indications. It is conceivable, for instance, that dilated ventricles displaced towards the injected side by tumour of the opposite side might so distort the vascular trunks on the injected side as to give an entirely false localisation. T. DE MARTEL,[3] commenting on eight cases examined by the method of MONIZ, says that in two of them the method gave useful information, while in the others operative verification was unsuccessful or not undertaken. He thinks that arteriography may be useful in the case of
umours which are certainly supratentorial, but
which the cerebral localisation is not precise.
It is not easy to see what advance in the diagnosis
cerebral disease can come from arteriography,
possibly it may have a definite value in the
stigation of angiomatous tumours in which
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he physiologist as well as the surgeon.

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IVIDUAL PSYCHOLOGY.

neuroses are not a modern product,
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Soc. nat. de chir., 1930, lvi., 313.

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[See also pp. 15 & 27]

studies of the mental aspect of those states that are still called functional nervous disorders. Almost simultaneously **Freud** introduced a psychopathology which, in spite of its difficulties, is becoming more and more applied to the understanding of those manifestations. The study of the subject received a stimulus from the numerous psychoneuroses that arose in the late war, and a flood of popular books indicated that interest in it had reached the public; the growth of the mental hygiene movement and the establishment of special clinics are to some extent the result of the interest then aroused. As a further result many neurotic sufferers, who typically express their troubles in physical symptoms or terminology, are now ready to set aside "nerves" and its diagnostic congeners and to recognise their troubles as emotional difficulties of reaction or adaptation. Practitioner and patient are now faced with a problem, for the former's training has not fitted him to deal with this aspect, the few clinics are overcrowded, and time and expense limit the function of the specialist.

The address on the structure of neurosis given by Dr. **Alfred Adler** to the Section of Psychiatry of the Royal Society of Medicine[1] bears directly upon this problem. Dr. **Adler**, who claims for his views the title of "Individual Psychology," follows the methods of persuasion already laid down by **Dejerine** and sees in the neuroses a false solution of the problems of life, to be remedied in the adult patient by convincing him of his lack of social coöperation and training him to coöperate first with the doctor and then with others. This principle of coöperation is elaborated into an ethical system in an address printed elsewhere in this issue, but whilst freely recognising the value of ideals in social life we approach somewhat critically a claim to have solved once and for all the problem of the neuroses. If we compare **Adler**'s pathology with the matter contained in Dr. E. G. **Howe**'s lectures, now appearing in this journal, we are at once struck by its easy appeal. Science demands, says **Adler**, logic, common sense, and experience, and the experience drawn upon by him is within the understanding of any intelligent person, however ignorant of psychopathology. The difficulties of investigating and understanding unconscious processes do not exist for his readers, who are asked to do no more than judge the neurosis by the standards of everyday needs and desires. Obsessions and compulsions, phobias, morbid anxieties, somatic hysterias, all are explained by the same easily understood conception. It is a pre-analytic, a naked-eye pathology. By its aid the neurotic patient can be given a formula that covers every symptom and carries with it the lesson that his troubles are an escape from social responsibilities, and with this lesson emotionally accepted—here the physician's technique plays a part—he can be helped towards a useful life. That the formula covers only a part of the mental processes concerned, the part already recognised as the secondary aim of the neurosis, is immaterial. **Dejerine**, discussing mental and moral foundations, wrote[2]:—

> "It would indeed be altogether too naïve to think that the psychotherapist has at his command a special mode of reasoning, unknown before his time, a dialectic of invincible power. It is the confidence he inspires, it is the way of saying it, that leads to success."

We can see how the qualities, even the defects, of individual psychology meet some of the needs of the situation. Containing some essential truths, easily comprehended, all-embracing, and with the appearance of finality, it leaves no room for doubt on the part of those who accept it; the first essential of persuasive therapy is established, for confidence inspires confidence, and among the many neurotic sufferers crying out for help there is scope for the application of this simple and sometimes effective mode of treatment. Yet there is great danger in the claim of individual psychology to furnish a complete pathology of the minor, and, apparently, of the major psychoses. It is well known that **Adler**'s views owe some of their prominence to the fact that they are in opposition to those which find that sex plays an important part in the psychoneuroses. One potent factor, for example, is believed to be our emotional taboos and inhibitions, which are independent of the needs of ethical or social training and fall with especial severity upon the child. This factor either does or does not exist, and if it does exist it must be recognised, however great may be the social reaction against that recognition. For an ex-member of the Vienna Psycho-analytical Society to address a medical audience on the structure of the neuroses without mentioning sex is a *tour de force* that makes us wonder how and why it is done. Whether in its emotional inhibitions or in other ways society is responsible for thrusting upon its individual members conditions from which neurosis must inevitably result is a question to which a positive answer is likely. Recasting an old maxim, we might say that every society has the neuroses it deserves. The danger as well as the attraction of individual psychology is that it offers an easy escape from the difficulties of understanding modern psychopathology and a means by which we can avoid the consideration of probable cracks in the armour of our social self-satisfaction.

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THE SOURCE OF PUERPERAL INFECTION.

It is now some years since hæmolytic streptococci were definitely indicted as the chief agent in the ætiology of puerperal fever, although other cocci, the colon bacillus and certain diphtheroids were known to cause infection occasionally. Subsequent work has only increased the weight of the charge against the streptococcus. The identification of the principal offender did not, however, complete the story of the crime, and much controversy has raged around the problem of the source of infection. A group of workers headed by Mr. **Victor Bonney** has maintained that the infection is mainly endogenous, while many others hold that it is often, primarily, or always exogenous. Recent work by Dr. JOHN SMITH at the City Hospital Laboratory, Aberdeen (summarised at p. 264 of this issue), supports those who believe that infection is generally introduced from without. He examined 18 cases of puerperal fever and three cases of septic abortion and studied the serological types of the organisms found. Of 13 cases of puerperal fever infected with *S. hæmolyticus* the strains came from an extrinsic source in 12. In no less than 11 cases of puerperal fever and one of septic abortion the infecting strains were traced to the throat or nose of the doctor, student, or nurse in attendance. Since the work of G. F. and G. H. DICK on scarlet fever, a great deal of bacteriological research on hæmolytic streptococci has been initiated. The Dicks have maintained that *S. scarlatinæ* is a special type of organism toxigenically different from other types, and other workers have claimed that ysipelas and puerperal fever respectively also have their own peculiar strains. More recent work, however, has failed to support the suggestion that the strains from different diseases produce different toxins. It has been shown that the toxins from various strains can be neutralised by scarlet fever antitoxin or, indeed, by antitoxins prepared for puerperal fever or erysipelas. It therefore seems probable that these organisms are very prevalent and that they must be harboured normally in some part of the human body. Nobody will dispute the statement that the nose, tonsil, and nasopharynx are the lair of the culprit. D. J. DAVIS declares that hæmolytic streptococci are found in from 10 to 60 per cent. of normal throats and that in susceptible persons this source of infection may cause disease through any form of contagion by droplet or spray infection.

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[1] The Lancet, Jan. 17th, p. 136.

[2] Psychonévroses. Dejerine and Gauckler, Paris, 1911, p. 427.

The measures to be taken to prevent puerperal infection depend on its origin. Those who believe that it is due to contamination from the patient's own bowel have naturally suggested a régime of sealing-off the anus in some way. That their attempts have not been wholly successful is at least partly due to the grave difficulties put in their way by Nature herself. To attribute puerperal infection to this natural neighbour of the genital tract is to accuse Nature of a carelessness and recklessness towards natural processes that she does not often show. At one time she was accused of surrounding the birth orifice with a collection of hairs calculated to introduce infection despite the most elaborate precautions. Why 99 per cent. of women did not suffer through this mistake was never quite explained, but the hair was duly shaved until somebody pointed out that, so far from introducing infection, the hairs drained it off. This latest work of Dr. SMITH suggests that, once again, it is not the anatomy of the parts that is at fault, but the interference of man. Interference in these civilised days may be unavoidable, but it is our business to make it as perfect as possible. Dr. SMITH suggests that it may not at present be feasible to examine the throat and nose of every person in attendance, but that at least doctors and nurses might take suitable precautions by adequate masking. Any septic focus in patient or attendant should also be carefully investigated. Hospital maternity beds should be isolated by metal or glass screens and no patient should be examined or treated in the common wards. Dr. SMITH is confident enough to state that as soon as the extrinsic source of the bulk of puerperal infection is realised, and a satisfactory surgical technique is evolved, a large decline in the number of cases is bound to follow.

ANNOTATIONS

PREGNANCY AND TUBERCULOSIS.

OPINION continues divided as to how far pulmonary uberculosis is worsened by pregnancy and parturition; o what extent therefore, and at what period of regnancy, an artificial termination should be induced. ome would leave these cases rigidly to Nature, elieving that a natural delivery is always less harmful han one that is induced; others would resort to æsarean section, which affords the opportunity of terilisation at the same time. Opinion is again ivided as to the advice to be given concerning arriage, conception, and lactation; more attention hould perhaps be paid to the improbability of the dvice being taken, if it is contrary to the desires f the patient. In Gibbon's words, advice may be eeble to stem, if strong and irresistible to impel. uring latter years the induction of artificial pneumothorax during pregnancy has been sharply discussed, nd no doubt as the practice of collapse therapy xtends it will be more employed on pregnant women; our verdict on this, as on that of artificial neumothorax in general, must await the passage f time with the analysis of unselected hospital igures.

Recently H. B. Matthews and L. S. Bryant have investigated,[1] by letter of inquiry, the question of pregnancy, parturition, lactation, and menstruation in 1000 tuberculous women under comfortable circumstances. Less than half responded but from 484 replies, which were considered sufficiently full, certain conclusions were drawn. It was decided that pregnancy had a harmful effect on tuberculous women and that this was more serious if the disease was advanced. Patients who did not become pregnant until three years or more after their discharge from sanatorium, and who (on their own showing) carried out their instructions conscientiously, fared better than the others. Spontaneous abortion and post-partum hæmorrhage occurred more frequently in these patients than in the normal population. Among the live births there was an infant mortality of 4 per cent., but 91 per cent. of the survivors were healthy normal children; 71 per cent. of mothers nursed their babies. For this information we may be grateful, while recognising the pitfalls of the research by questionaire which is becoming so popular. We are not told that these patients' medical advisers concurred in their statements, for the inquiry was made from the patient herself; much might have been gathered from the story of the 500 and over who did not reply. As the inquiry concerned ex-patients only it ignored that class of case when the onset of disease occurs during pregnancy or after parturition. W. B. Hendry[2] has discussed the treatment of pregnant women and stated his belief that they should be left alone unless the lesion is active, in which case the pregnancy should be terminated during the first three months. After the first three months he regards the prognosis as grave whatever course is adopted, but it may be safer to allow the pregnancy to pursue a normal course, shortening the second stage of labour by the use of forceps or pituitrin, or by performing Cæsarean section under local anæsthesia. He sums up the situation thus: "When an active lesion is present in an unmarried woman, advise against marriage; when the patient is already married, advise against pregnancy; when pregnancy exists in the earlier months, advise its termination; when it has passed the third trimester, watch and pray." At the British Medical Association meeting held at Nottingham a few years ago R. A. Young produced a similarly epigrammatic summary: "If a virgin no marriage; if married no pregnancy; if pregnant no confinement; for the mother, no suckling."

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[1] Jour. Amer. Med. Assoc., 1930, xcv., 1707.

At a joint meeting, reported in our last issue (p. 186), of representative obstetricians and those especially engaged in tuberculosis work, it was agreed that at least 50 per cent. of women with active tuberculosis are made iller by parturition, and that it is difficult to differentiate the effect of pregnancy from that of parturition. It is, therefore, safer for a woman with active tuberculosis not to bear children. If, however, she is already pregnant the attending physician has to decide whether the pregnancy should be interrupted or allowed to terminate naturally, bearing in mind that there are some tuberculous women on whom pregnancy has no deleterious effect, and a few whose condition seems improved by childbearing. In each case it has to be considered whether an artificial termination will be less harmful than the normal event to that patient; and here we have a conflict of evidence and an insufficient number of published cases finally to decide the point, for it is important to be guided, in this as in other matters, by actual experience rather than by the opinions of great men. If a living child is born the next problem is whether the infant should be breast-fed and for how long. It seems clear that most infants gain from breast-feeding and that the mothers do not lose, provided lactation is not prolonged. Breast-feeding should therefore be the rule unless contra-indicated in the individual instance by the risk of infection from a woman with an open lesion; the period of lactation might be limited to six months. On the liability of the children of tuberculous mothers to become infected the data are conflicting; the figures of Matthews and Bryant, referring to the 48 per cent. of good-class mothers who replied to a questionaire, can hardly be taken as applying to the bulk of the population. Nor do figures dealing with babies provide information as to their fate in later life, for they not only risk infection but also inherit a poor resistance. Other factors in the problem are worth attention. Ernest Ward showed that in 21 per cent. of 240 pregnant tuberculous women the onset of disease occurred during pregnancy or after parturition, and that of these one half died within a few years, the prognosis being far worse in their case than in those whose disease antedated pregnancy.[3] If pregnancy is to be interrupted such cases might have to be considered especially suitable. Marriage apart from conception usually improves a patient's health, and advice on contraception might be efficient where advice against matrimony would be futile. In any case, it may be better to counsel a possible postponement than attempt to impose an impossible prohibition. There must, we think, be a freer interchange of experience, some remoulding of individual beliefs, and a larger body of observed facts at disposal before valid conclusions are reached.

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[2] Canad. Med. Assoc. Jour., 1930, xxiii., 805.
[3] THE LANCET, 1923, ii., 557.

AN INDEX OF RENAL EFFICIENCY.

THE drawback of most of the tests of renal function is that they require special technique or equipment. Herein lies the chief advantage of the "dilution and concentration" test. The patient empties his bladder at 7 A.M. and then drinks 1000 c.cm. of water within about ten minutes. The urine is collected hourly for four hours and then two-hourly till 7 P.M. Fairly dry food is allowed for meals but no fluid until 7 P.M. and then only enough to allay thirst. The normal kidney eliminates the whole of the ingested fluid in the first four hours with a lowering of the specific gravity of the urine to 1005 or less; after the first four hours the specific gravity gradually rises to 1020 or more. Failure to secrete the ingested fluid in the four hours or to produce a marked fall in specific gravity with subsequent rise indicates impairment of renal function. Brink[1] reports very favourably on the clinical value of this test. Buck and Proger[2] have compared it with the other tests of renal efficiency in 100 cases and find it not only more easily performed but also a more sensitive index of renal damage. They have further simplified it for the benefit of ambulatory patients, so that the only specimens of urine examined are the one passed two hours after the water is drunk and the one passed on rising the following morning. If the specific gravity of these specimens shows good dilution and concentration respectively, no further examination is necessary, but if this test is unsatisfactory the case requires a more complete investigation.

SCOTTISH FAMILY DIETARIES.

THE purely quantitative aspects of nutrition no longer occupy the pre-eminent position that they held 20 years ago. This is easily understood when we consider the striking demonstrations that have been made in recent times of the value of specific food constituents in animal nutrition. Yet the problem of how much protein, fat, and carbohydrate a man should take to maintain himself in a state of health has by no means lost its devotees. By the method of direct experiment with individuals and small groups of men it has repeatedly been shown that very great variations in the proportions of these constituents are compatible with normal health and efficiency. Nevertheless a systematic study of the amounts of these classes of foodstuffs habitually consumed by a given section of any community may be of academic interest even if its immediate practical bearing is not at once obvious. Such a study has just been reported by Prof. E. P. Cathcart, F.R.S., and Mr. A. M. T. Murray, Ph.D.[3] St. Andrews chosen for the investigation as representing a relatively well-to-do community, and among the 154 families whose household budgets were scrutinised all classes of society from the richest to the poorest were included. The diet had an average energy value, reckoned on the basis of the adult man, of 3119 calories and contained 89 g. of protein, 119 g. of fat, and 411 g. of carbohydrate. The most striking feature of this analysis is the high proportion of fat, which is more than double the amount commonly accepted as the standard for a European. Yet, curiously enough, the composition of the diets studied on this occasion is almost identical with that of the average diet in the United States. It was noted that although the amount of protein in the diet increased with a rise in the family income, the proportion of the total energy supplied by protein was remarkably constant in all the groups studied. The amount of fat, on the other hand, increased both absolutely and in proportion to the total energy value with any increase in financial resources. Further problems that are discussed include variations in the composition of the diets according to the social class and occupation of the householders and the efficiency of the parents. The general impression is gathered that the population of St. Andrews can be regarded as being well nourished, suffering neither from gluttony nor food shortage.

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[1] Brink, C. D.: Clin. Jour., Jan. 7th, 1931, p. 6.
[2] Buck, R. W., and Proger, S. H.: New Eng. Jour. of Med. Dec. 25th, 1930, p. 1283.
[3] A Study in Nutrition. An Inquiry into the Diet of 1 Families of St. Andrews. Med. Res. Council, Spec. Rep. Ser. No. 151. H.M. Stationery Office. 1931. 1s.

EFFICACY OF SERUM IN DIPHTHERIA.

FOLLOWING a complaint by practitioners in the north of France that antidiphtheritic serum, although given in larger doses, is much less efficacious than previously, an inquiry was instituted by the Commission of Serum and Vaccines of the Ministry of Public Health. The conclusion arrived at was that the serum is not to blame. J. Lignières, in a contribution to the study of the causes of insufficient activity of antidiphtheritic serum"[1] has reviewed the facts and produced some valuable comments. In recent years, he points out, the dose of antitoxin in the treatment of diphtheria has considerably increased. Thus in 1894, when serum therapy was started and for a few years afterwards, only 40 c.cm. of serum was given on the first day to severe cases, and the total injected throughout the treatment did not exceed 80–90 c.cm. At the present day in France the usual amount is about 300 c.cm. of unrefined serum. Translating these quantities into Ehrlich units of antitoxin, 1500 units were formerly given in severe cases, whereas now 100–200,000 units are normally injected and this amount is exceeded in serious cases. In the United States and Argentina still larger doses are given.

In view of the general tendency to increase even these massive doses of antitoxin, it is imperative to consider whether such large quantities are really necessary to get satisfactory results, and at the same time to remember that these results are not superior to those previously obtained with weaker antitoxin. Why therefore is a much more powerful antitoxin needed? Various suggestions have been made, based on the lateness of treatment, associated micro-organisms, the resistance of the patient, the type of epidemic, and the virulence of the bacillus. These factors which may influence any one case have always existed, and do not suggest any solution to the problem. Lignières considers that the toxin is at fault. The original serum made by Behring was comparatively weak in antitoxin, but Roux improved considerably on this, while Roux and Martin indicated the optimum conditions for obtaining the toxin. In 1894 Anna Williams isolated from a case of tonsillar diphtheria a strain of diphtheria bacillus known as Park-Williams No. 8, which for producing a powerful toxin has probably not been surpassed by any other strain. It is this strain of diphtheria bacillus which is used almost exclusively throughout the world for producing antitoxin, and which has been responsible for the extremely high titre sera obtained. But it is 36 years since this strain was isolated, and during that time it has been grown exclusively on artificial culture media. The question now arises whether its pathogenic power (as apart from its capacity to produce toxin) has not changed. Fatal cases of diphtheria have occurred in which antitoxin appeared to have no effect whatever, but organisms isolated from such cases have proved to be much inferior to the Park-Williams strain in their power to elaborate toxin. Owing to the supreme toxigenic power of the Park-Williams strain, it has been universally adopted, and no attempts have been made to replace it. Lignières considers this to be a grave mistake. He thinks that there is a distinct difference between pathogenicity for the human being and toxicity for the guinea-pig, and quotes similar examples with other organisms. The effect of successive cultivation on artificial media is to reduce the pathogenic power, and vaccines and sera derived from such organisms become less and less effective. The conclusion arrived at is that a recently isolated bacillus, though not so toxic as the Park-Williams strain, would produce a better serum, more powerful in its bactericidal action, and more efficacious from the therapeutic point of view. The bactericidal action of the serum must not be ignored, for observations have shown that in severe cases the bacillus invades the blood stream, and can be isolated from internal organs. The good results of immunisation by the anatoxin of Ramon are ascribed by Lignières to the fact that toxins from different types of recently isolated bacilli are used. He suggests therefore that antitoxin should be made from a mixture of recently isolated local strains of diphtheria bacilli. This antitoxin should be tested against the Park-Williams antitoxin now in use. The importance also of the bactericidal action of the serum should not be overlooked when treating severe cases of diphtheria.

This thesis of Lignières is worthy of the careful consideration of all who are concerned with the manufacture and use of diphtheria antitoxin.

DUST DISEASES.

IN another column Prof. Lyle Cummins relates the results of an examination of the lungs of coal-miners, in which he has been engaged for some years past. These satisfy him that the anthracosis of coal-miners is a dual condition in which the retention of coal dust in the lungs is due to a state of fibrosis indistinguishable from that found in silicosis. One characteristic feature of silicosis is however absent in the case of coal-miners—namely, the increased liability to tuberculosis. In order to explain why lungs so damaged do not more readily succumb to tuberculosis, the theory is advanced that the active principle of tuberculin is absorbed by the coal dust in the lungs—an adsorption which, it is stated, carbon particles effect in vitro. Were this so it should follow that the soot-laden lungs of city dwellers would be more resistant to tubercle than those of country folk; but mortality records point to the reverse. Even though coal-miners on the whole escape tuberculosis, on some fields they experience excessive mortalities from bronchitis which has been ascribed to the mechanical action of dust upon the larger air passages. But here also a fresh explanation has just been put forward. Prof. J. S. Haldane on Jan. 15th, before the Institution of Mining Engineers, developed the idea that liability to bronchitis depends very largely on the amount of muscular exertion which an occupation implies, and that, since coal-mining is an occupation involving much hard muscular work, it is only to be expected that the bronchitis mortality in it should be high. This idea does not account for the fact that the bronchitis rate on some coal-fields is well below normal, while that on others is far in excess. In a paper dealing with recent views on pneumonoconioses, communicated to the Epidemiological Section of the Royal Society of Medicine last week, Prof. E. L. Collis also referred to the miner; but first he pointed out that isolation of silicosis, as a specific entity with a specific cause, from the diseases caused by dust had led to close study of it and of other dust troubles. Wherever silica dust has been found as an occupational hazard, silicosis with its characteristic predisposition to tuberculosis results from it; and silica is now recognised to be a toxic industrial hazard of the first importance, however insidious its influence. Recent occupational records have shown that silicosis is not the only dust disease; bronchitis, which is usually associated with it—but may occur alone—and also pneumonia, may be equally important. Without doubt silica acts on the lungs chemically rather than mechanically; hence may arise an association between this dust hazard and diseases of the cardiovascular system, since it may induce degenerations in other tissues as well. But quite apart from such degenerations and from superadded tuberculous infection, silicosis in an advanced stage can lead to a fatal issue.

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[1] Bull. de l'Acad. de Med., 1930, civ., 698 and 720.

Efforts to determine a safe threshold of atmospheric dustiness are placing it at about 6 million fine particles of silica per cubic foot of air. In many industries, notably in granite cutting and in mining, the replacement of hand work by pneumatic tools has led to this threshold being greatly overstepped with disastrous results, while acute silicosis has elsewhere resulted from combining silica dust with that of sodium carbonate. Once a lung is dusted with silica the condition progresses, even though exposure ceases; but incapacity may not result until a later stage, unless some infection, usually tuberculosis, supervenes. Thereupon latent silicosis is precipitated as fibrotic nodules, while the infection runs riot. The progress of fibrosis can be detected by radiography; but other dusts than silica may originate fibrosis which throws shadows indistinguishable from silicosis. Hence radiography is not, as was hoped, a sure means for diagnosing silicosis. Experiments have shown that silica dust can reactivate quiescent pulmonary tubercle, and also make living tissues a suitable pabulum for these bacilli; thus has been demonstrated that the relation indicated clinically and pathologically between silica and the tubercle bacillus has a definite existence. Recent investigations made into the possible effects of calcium dusts, particularly those arising from Carrara marble, from Portland and Bath stones, present a sharp contrast, as they exhibit these dusts as quite innocuous. Cement dust also causes but little trouble, and that little is probably due to the presence of silicates. Coal dust again seems harmless; but most coals contain more or less minerals, capable of originating fibrosis, leading to excessive mortalities from pneumonia and bronchitis. Certain coal-miners driving roads through sandstone rocks contract pure silicosis. But all forms of pulmonary fibrosis in coal-miners lead to the blocking of coal particles in the lungs, so causing anthracosis in which the coal dust acts mechanically and may convert lung tissue into solid black blocks. The lungs of miners of iron ore exhibit on the X ray screen fine generalised mottling which is coming to be recognised as a form of fibrosis distinctive from silicosis. This form is originated particularly by the dust of silicates, and is seen most definitely among asbestos workers. Although it does not predispose to tuberculous infection, as does silicotic fibrosis, it impairs the pulmonary functions even more, and in characteristic cases of asbestosis soon causes incapacity, leading on to a fatal ending. Recognition of this specific form of fibrosis, originated by the dusts of silicates, is the outstanding feature of recent work. The extent to which the whole study of dust diseases has in recent years been advanced in this country, in South Africa, in the United States, and in Australia—i.e., by the English-speaking nations—is remarkable. More than ever is it being grasped that each dust calls for special study.

EMOTION AND BLOOD PRESSURE.

THOUGH the importance of nervous factors in the causation of arterial hypertension needs little emphasis, the extent of the variation of blood pressure under stress of excitement or emotion is not so well known. In sleep and calm surroundings the pressure usually falls, but extreme temporary increases are thought to occur during nightmares, and this is generally believed to be the explanation of most of the deaths in sleep from apoplexy. In some psychoneurotic patients there is a marked raising of the blood pressure during mental stress, and clearly arterial tension varies more widely in nervous subjects than in others. As our Berlin correspondent has reported,[1] an interesting study of reactions in "normal" people was recently carried out by R. Fischer, of Vienna. Fischer[2] used as his subjects 16 male chess-players, and examined the blood pressure during and after the severe mental effort of important chess matches. He could not, however, conclude that the actual intellectual processes of chess playing caused any appreciable temporary or permanent increase of blood pressure. Emotion, on the other hand, may undoubtedly cause a rise, and the excitement of medical examination for life insurance often leads to a definite hypertension which is a source of anxiety to medical examiners. Not only is it sometimes hard to determine how far the high blood pressure is nervous and transitory, but it must also be decided what significance the instability itself possesses. There is no doubt that subjects in whom nervous hypertension is marked are often those in whom some vascular disease already exists, and in any case it appears to indicate an arterial imbalance which may possibly develop into permanent and pathological high blood pressure. In eight cases of extreme vascular instability associated with emotional hypertension, reported by E. J. Stieglitz,[3] the rise of pressure under psychic strain was in the neighbourhood of 50 mm. Hg. This rise was accompanied by definite subjective symptoms which Stieglitz compares to those complained of by women at the climacteric. Such extreme nervous hypertension he considers a precursor of true vascular disease; it is perhaps the earliest stage of "essential high blood pressure." If this is so, an undue rise of pressure under nervous stress cannot be regarded as without significance, although the imits of the normal must be difficult to fix. Certainly high blood pressure and apoplexy are often seen among those who have led anxious lives in mental rather than physical exertion, and although we cannot yet detect completely the other factors at work, it is evident that "normal" people whose blood pressures are especially liable to rise under psychical stress should avoid as far as possible occupations involving nervous excitement. But, of course, the horse cannot always be made to drink this particular water—and who blames him?

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[1] THE LANCET, 1930, ii., 927.

[2] Med. Klin., 1930, xxvi., 625.

[3] Amer. Jour. Med. Sci., 1930, clxxix., 775.

PULMONARY ABSCESS.

An improvement in diagnostic methods is often ollowed by an apparent increase in the incidence of articular diseases. Before the development of hest radiograph many conditions now recognised as mmon were regarded as rare, and it is difficult, for mple, to determine whether the statistical increase cancer of the lungs is a real increase or not. ulmonary abscess is another condition which cannot e diagnosed with confidence unless a skiagram is rthcoming. Radiology has shown that pulmonary ppuration, formerly regarded as an exceptional vent, is relatively common. In the light of X rays he teaching of Laennec that "no organic lesion is rer than a true collection of pus in the pulmonary ssue" can no longer be maintained. As I. Nanu-uscel and N. Stoichitza point out,[1] only acute lmonary abscesses could be diagnosed in the pre-ntgen era, for chronic lung abscesses were inevitably nfused with other chronic inflammatory conditions, r example, tuberculosis and bronchiectasis. On the her hand, those who maintain that there has been actual increase in pulmonary abscesses attribute to the recent prevalence of influenzal pneumonias. further suggestion that the Anglo-Saxon races are culiarly subject to pulmonary suppuration as the sult of tonsillectomies under general anæsthesia is rhaps worthy of consideration. An unhealthy nsil lying in its own bed is certainly less of a danger an it is when some fraction of its substance, or ne of its products, are transferred to the lower air ssages. It seems unlikely, however, that pulmonary suppuration is commoner to-day than it was eneration ago. The urban dweller at least breathes leaner air than did his ancestor and in general is s exposed to septic infection. It is rational to sume that any apparent increase in suppurative eumonitis is due to more precise diagnosis, and we ust insist that this is due entirely to modern methods precision, notably the application of X rays and bronchoscope. Accurate diagnosis is the essential liminary to sound treatment. And the accurate gnosis of pulmonary disease is only possible when agrams of the best quality are available, and when se are interpreted by those who have learned correlate clinical facts with radiological findings.

The first evidence of abscess formation on the ray film is the appearance of a more or less localised d uniform opacity in the lung field. The right g is more commonly affected than the left, and ppuration has a tendency to affect the middle e in the region of the fissure between the middle d lower lobes. Disintegration of the lung tissue the centre of the diseased area results in the mation of a cavity containing pus. At this stage a clear area above a fluid level surrounded by a clouded zone forms a picture that is pathognomonic of abscess. It is well to remember, however, that the cause of the abscess must still be determined, for a tuberculous vomica if it contains fluid or a cavity due to the breakdown of malignant tissue may simulate the results of ordinary suppuration.

Acute abscesses may resolve as the result of natural healing processes and leave only the evidence of a scar on the radiogram. Many abscesses do unquestionably heal in this way. The Rumanian writers quoted above are rightly sceptical of the claims preferred for various forms of medical treatment. Subcutaneous injections of emetine, of vaccines, or of chemicals, may be administered while the abscess is healing. The patient's morale may be supported and the physician's desire to participate in nature's therapy may be gratified in this way, but it is difficult to assess the results of medical treatment when nature's treatment is already at work. The wise physician will be careful to avoid doing anything which may hinder a natural cure. It is the chronic abscess that demands active treatment, and when it has persisted for two or more months surgical intervention should be considered, for the prognosis of chronic pulmonary suppuration is grave. It has been estimated that 60–80 per cent. of untreated chronic lung abscesses result in death within three or four years. Pulmonary suppuration will not remain localised, the condition will tend to spread and secondary bronchiectasis will bring further complications. Anaerobic organisms breeding in the closed abscess cavity may give rise to pulmonary gangrene and the patient's life becomes a burden. The victim of chronic pulmonary suppuration is indeed a pitiable object. His strength declines, his breathing is laboured, he is distressed by constant cough. Expectoration is copious and disgusting to his taste, while the fœtid breath he exhales is a source of almost intolerable nuisance to those who attend him and, though less directly, to himself. Operative risks are, therefore, justifiable, especially if there is a reasonable prospect of a complete and lasting cure. If this prospect is to be realised, operation should not be postponed for more than about two months from the onset of symptoms. It is hopeless, whatever methods are employed, to expect the healing of a lung that is sodden with pus. The choice of operation will depend upon the site of the lesion. Lobotomy, and drainage, lobectomy by the electro-cautery or thoracoplasty may be indicated, but it is necessary to realise that feeble measures will not suffice. Indeed, lesser procedures, for example the induction of an artificial pneumothorax, may prove more dangerous than far more radical operations. It should never be forgotten that the alternative to radical operation is a pitiful death from chronic suppuration.

AMINO-ACIDS IN PERNICIOUS ANÆMIA.

Hæmoglobin may be looked upon as a combination of hæmatin and globulin; hæmatin contains a tetrapyrrole group and globulin consists largely of histidine; histidine contains the iminazole nucleus. There is good evidence that the human organism is incapable of synthesising either the pyrrole or the iminazole nuclei, the total amount in the body being derived from ingested foodstuffs, and it is remarkable that the organism should be dependent on outside sources for its supply of these two organic nuclei which play so important a part in the formation of hæmoglobin. With this in view G. Fontes and

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[1] Arch. méd.-chir. de l'app. respir., 1930, v., 295.

L. Thivolle[1] have recently experimented on the effect of the deprivation and the injection of these bodies in men and animals. As their source of the pyrrole nucleus they used tryptophan and for the iminazole nucleus histidine. They found that deprivation induced in rats severe anæmia and cachexia—a fact which so far as tryptophan is concerned has long been recognised. By the injection of a mixture of one part of tryptophan and two of histidine they found that they could restore health to these cachectic and anæmic animals. In human sufferers from pernicious anæmia they found that the daily injection of 100 mg. of tryptophan and 200 mg. of histidine produced a rapid rise in the blood count and improvement in the general condition; it is reported that after a month of this treatment the patients were able to carry on in a state of undiminished health and vigour for six months without further treatment. Fontes and Thivolle suggest that the curative action of liver in pernicious anæmia may be due to its containing large amounts of both of the "hæmatogenous amino-acids" in relatively simple combination, and they say that the only effective therapeutic liver extracts contain these two amino-acids in high concentration. Pernicious anæmia they attribute to a failure of the alimentary system to carry the digestion of proteins to the stage at which the "hæmatogenous amino-acids" are made available for assimilation. In support of this view they point to the achlorhydria and the digestive disturbances universally met with in this disease.

INTRAPERITONEAL THERAPY IN CHILDREN.

THE administration of fluid and drugs to young children when they are ill often presents great difficulties, which can sometimes be overcome by using the intraperitoneal route. G. C. Grulee and H. N. Sanford[2] have no doubt that fluid and drugs so given are absorbed, though the exact mechanism of absorption is obscure. They have used intraperitoneal injection to supply glucose solution in infantile diarrhœa with dehydration, in pneumonia, in pyelitis, and in post-operative illness, and they have also used it for blood transfusion, and for giving neo-arsphenamine in congenital syphilis, antitoxin in diphtheria, and colloidal iron in secondary anæmia. The possible dangers are infection of the peritoneum, pressure on the diaphragm by injection of too much fluid, and occasional severe reactions from irritation by the substances injected. We may perhaps add injury to an important organ, but this risk is not as serious as might be supposed.[3] The disadvantage is that with some substances, such as blood, absorption may be slow, though usually it is very rapid. The advantages, on the other hand, are great: oral, rectal, and subcutaneous administration of fluid in young children is often unsatisfactory and much larger quantities can be taken via the peritoneal cavity—e.g., 100 c.cm. of 5 per cent. glucose solution may be given at one injection and frequently repeated. In severe anæmia it is claimed that frequent small intraperitoneal injections of blood are easier to give and cause less severe reaction than repeated intravenous blood transfusion. H. Florey and L. J. Witts,[4] it may be recalled, came to the conclusion that in emergencies abdominal transfusion of blood is not so valuable as intravenous injection and thought it should be reserved for the more chronic forms of anæmia. Although some critics may feel that asepsis of the peritoneum is too sacred a thing to tamper with in ordinary circumstances, there are undoubtedly times when the giving of an adequate amount of fluid is a matter of life or death, and in such cases at any rate the possibilities of the intraperitoneal route should be remembered.

GRANTS FOR RESEARCH.

THE trustees of the Ella Sachs Plotz Foundation are anxious to make known the resources of their fund, whose general object is the advancement of scientific investigation. The Foundation seldom or never offers stipends to investigators, nor does it provide apparatus and materials which are ordinarily part of laboratory equipment. Its special purpose is to give grants for the purchase of apparatus and supplies needed for special investigations and for the payment of unusual expenses incidental thereto, including technic assistance. At present research is favoured which be *on medicine or surgery, and the trustees endeav* to assist workers in various countries who are trying to solve identical or related problems. Thus considerable number of grants have been made in the last few years for studies on nephritis, while interna secretion and infection have also been specially favoured. In the seven years of its existence th Foundation has made 120 grants and investigator have been aided in 15 countries. The sums provide last year for 25 different workers ranged from 200 t 500 dollars each.

Applications for assistance during the coming yea should arrive before May 1st, including statement about the nature of the research, the amount of money wanted, and the objects on which it will be spent The secretary of the executive is Dr. Joseph C. Aub Corliss P. Huntington Memorial Hospital, Boston Mass, U.S.A.

RUSSIAN SCIENTISTS AT HOME.

THE Society for Cultural Relations with Sovi Russia is considering the possibility of organising scientists' tour of scientific institutions in Sovi Russia during July and August of this year. It proposed to arrange for parties of British worke engaged in physical, biological, and medical resear to visit and meet Russians engaged in similar inves gation. "Voks," the central institution in Mosco for organising cultural relations with foreign countri is prepared to give every assistance to the tour, "Intourist," the Soviet organisation for tou parties, will consider giving specially reduced travellin charges. All those prepared to join such a tour a invited to write to the secretary of the society 1, Montague-street, London, W.C.1.

We regret to announce the death, on Jan. 27 after a prolonged illness, of Dr. Archibald Leit Professor of Experimental Pathology in the Univers of London, and Director of the Cancer Resear Department of the Cancer Hospital, Fulha Prof. Leitch, who was in his fifty-third year, recently devoted much of his time to the succ development of various methods of expe carcinogenesis. He was an enthusiastic support of the British Empire Cancer Campaign and a prominent part in the organisation of the valua Conference held under its auspices in 1928.

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[1] Bull. de l'Acad. de Méd., 1930, civ., 730.

[2] Arch. Dis. in Childhood, December, 1930, p. 371.

[3] See THE LANCET, 1926, i., 772.

[4] Ibid., 1928, i., 1323.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

V.—INDIVIDUAL EMOTIONAL DEVELOPMENT.

LANTERN SLIDES.

It is desirable at this stage to get as clear an idea as possible as to the scope of psycho-pathology. Does it propose to reduce all experience, behaviour, and personality to "only" mechanisms and unconscious motives? Does it apply to everyone, sick or well, normal or abnormal, or only to those mental aberrations which are termed psycho-neuroses and psychoses?

Let us imagine for a moment that we are working a magic lantern, which has thrown on to the screen a blurred and confused image that is unintelligible both to us and to the audience. "What does this confused picture mean?" we ask. Parts of it seem to be plain, but not obviously connected with each other, and the whole is blurred, as if several slides are projected on to the screen at the same time, overlapping one another. Perhaps someone comes to our assistance, pulls a slide out of the magic lantern, and holding it up to the light says, "Look, it is quite simple. This is a straightforward picture of an Inferiority Complex." And so perhaps it is. But then another helpful person comes forward, and taking out another slide says, "This is obviously an Œdipus Complex, and those things are only phallic symbols." Then there are others, who each discover different slides. One says, "The man is a thinking introvert, and that accounts for everything." Another says, "Recapitulation mechanism." Another, "The man is hyperthyroid with an over active sympathetic system." Another, "He is toxic: look at his teeth." But each is liable to see only the one slide which he is examining, whereas the truth was in fact just that confused picture which was on the screen, showing the sum of many factors, which was the man's life as a whole. Each slide was in fact included in that whole, but it was not the only one.

Let us try to generalise about these "slides," and classify them a little, to show of what factors each individual life is composed. In other words, we can sort out the confused picture which each individual life presents by analysis of its component motives and experiences.

The first "slide" which we must look for is *individual experience*, the particular factors of environment which have influenced development in each particular case. Remembering the importance of "transferred affects," we can analyse back from the value of "this, now" to the cause in an experience of "that, then." This slide seems to be complete in itself, developed in continuity and by association, but it is not all of a person's life and character, and leaves much still to be understood.

The second slide is *recapitulation*, and is something quite separate and distinct from the first. It does not refer to individual experience, but to the expression of inborn racial factors, which seem to be quite independent of experience, and conform to general types. Both what we fear and whom we love are influenced by recapitulation, as well as by experience. Recapitulation therefore makes our understanding of life infinitely more complex, because it introduces deeper factors independent of personal experience.

The third slide which we may expect to find is that of *type*, which is a matter of great importance in individual variation. The best classification of types is that of Jung, who divides people into (*a*) extraverts, (*b*) introverts, each again divided into (1) thinking, (2) feeling, (3) intuitive, (4) sensorial as subjunctions. This is in itself a very large subject, and readers who are interested in pursuing it further are referred to Jung's "Psychological Types."

The fourth slide is due to *physical factors*, such as endocrine variations (e.g., thyroid, pituitary, gonad and adrenal excess and deficiency) or toxæmia from any source.

So far our analysis may be mathematically logical and determined. We may examine each slide separately, and say, "This is only a form of that, and has been produced in such a way, having been irrevocably determined and caused by so and so." Much analysis seeks to be of this mechanical and final kind; but is it then complete in its understanding of the individual, his character and behaviour? Or is there yet another slide, an original unique individual potentiality, distinct for each one of us, and not able to be analysed or defined any further? It may be regarded as being a difference of quantity or of quality, but we must allow for its existence, and accept it as the basis of our technique and the limit of our therapeutic success. Analysis cannot change fundamentals, or make "Silk purses out of sows' ears." It can only make the best use of the potentialities of each individual's innate endowment, and with that limitation it must be satisfied. We may call this last slide a *unique individual integrative and dynamic factor*.

Finally, we see that these five "slides" may be applied to everyone, well or sick, normal or abnormal, sane or insane, psychoneurotic or psychotic. But it is obvious that psychopathology will occur to a more marked degree in the sick, the abnormal, and the insane. The difference, however, is only a matter of degree, and we may expect to find our knowledge and understanding of our patients greatly increased and simplified by our knowledge of ourselves, our motives, and our behaviour.

Undifferentiated Ego.

We must now go back to the beginning of the individual life and enter, so far as we are able, into the world of the infant. A good deal of stress has been laid in some psychological quarters upon the baby's first experience, that of birth. There can be very little doubt that the more or less sudden change, from a life of complete tranquillity within the womb to the very different outside world, must come as a rude shock, towards which the first cry is an appropriate expression of feeling. As soon as this is over and the baby safely bestowed between the warm blankets of its cot, it has become more nearly restored to the earlier state of peace and tranquillity, except, however, for the urge of hunger. Warmth may be provided by the blankets, but the satisfaction of hunger requires food in quite a new way from that to which the baby has in the past been accustomed.

Before birth the state of the baby must nearly approach Nirvana in its feelings of bliss, peace, and omnipotence. Every need is supplied without effort, and the fœtus is protected from every external shock and danger. With birth comes a rude awakening, and the baby realises its first sense of *deprivation.* Food can now only be obtained at intervals and with a considerable degree of effort. Certain functions are expected of it and it is surrounded by unaccustomed stimuli. Every detail of life is a new experience and the constant struggle with environment, which must continue until death, has begun.

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* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Earlier lectures of the series have appeared weekly in THE LANCET since Jan. 3rd.

If we are to put in words the state of satisfaction which the fœtus must feel in intra-uterine life, we do so as a comparison with the changed state which must follow upon birth. Within the uterus the fœtus possesses a "limited omnipotence"—i.e., the immediate satisfaction of desire and a complete sense of safety. When it is born, the omnipotence has departed, familiarity and safety give place to novelty and fear, and the satisfaction of desire has to be postponed to suit the convenience of others. Development has taken place by deprivation and this earliest lesson of gaining by losing is only the first of many more which are to follow. The sense of *deprivation* gives rise to feelings of *resentment* and *rebellion,* and would seem to account for all the behaviour disorders of earliest infancy. The infant does not give up its prerogative of omnipotence without a struggle.

In the beginning, the world of the infant is only a large undifferentiated "me." There is no distinction between "me" and "not me." This is termed the condition of the "undifferentiated ego." Differentiation takes place through a gradual realisation of deprivation and a progressive distinction between what is "me" and what is "not me." In the beginning there is no difference between "my mother" and "me." She exists only as a source of gratification of my feeling of hunger, and her nipple is as much part of "me" as the mouth which receives it. The lesson of deprivation is an early one and gradual distinction is made until awareness of the limits of one's own ego is finally acquired. For the rest of our lives, however, we may be said to be struggling against our limitations, struggling as it were to fulfil our infantile conception of undifferentiated ego and effortless omnipotence. We rarely entirely give up the illusion of this extended possessiveness, and our passion for property and power in later life is often only a recrudescence of this infantile longing.

Let us try to trace the sequence of this development from the beginning to the end.

1. In the beginning is "me." *I feel* and *I wish.*
2. Then comes differentiation between "me" and "not me." "I feel *it* is not *me.*" This is accompanied by a sense of deprivation.
3. Experience of what is "not me" leads me to know what I feel about it (the *sense* of it).
4. I can then learn to know what "it" is, distinct from what I feel about it, and as having its own independent existence apart from me.
5. I make use of what is "not me" where I can to fulfil and satisfy "me." I can thus eventually get over my initial sense of deprivation.

GROWTH.

We must now define what we mean by psychological *growth.* It is the process of emotional development, which on the one hand occurs according to the pattern of recapitulation, and on the other results from interaction between individuality and experience. It is partly a consequence of the development of an inborn pattern due to past racial experience according to the law of recapitulation. It is partly a consequence of the individual's experience of interaction between himself and his environment. It begins with a differentiation between "me" and "not me," and proceeds by continuity and association, selection and integration, to the completeness of individual character. The dynamism of growth operates from within outwards, according to certain instinctive urges and through associated emotional states. Growth is a progressive distinction between "me" and "not me," in which the focus of interest is in the first place ego-centric and finally cosmo-centric. Self-expression and wish-fulfilment are achieved through manipulation to our ends of an external reality, which is viewed as something objective and independent of ourselves.

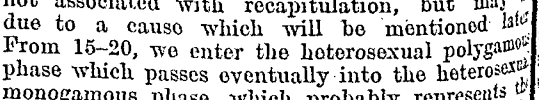
Failure in the development of individual character may be due to two distinct causes:

1. *Defective material* may cause an inborn weakness of individual constitution.
2. *Environmental factors* may thwart and overcome innate tendencies and potentialities. In either case it will be seen that the defect is due to a failure of individual growth to overcome the resistance of the external environment. The struggle between the two is a relative one, in that the lesser individual constitutional strength will only be able to cope with a less difficult environment, whereas the stronger constitution can succeed in the face of greater difficulties. It may be said that some character defects are born, but others are made by environmental influences. As Freud has said, some patients would have been ill in any case, but others under easier circumstances might have remained well.

Recapitulation Scale.

It is now necessary to correlate individual development, through experience and association, with what was said in the previous lecture about recapitulation. Individual emotional development and recapitulation take place, as it were, one overlaid upon the other, recapitulation being the underlying principle which is all the while being modified by experience.

FIG. 1.



In the above diagram† the earliest phase of emotional development, 1–3 years, is correlated with recapitulation of the endogamous racial phase. The homosexual phase, from 10–15, is probably not associated with recapitulation, but may be due to a cause which will be mentioned later. From 15–20, we enter the heterosexual polygamous phase which passes eventually into the heterosexual monogamous phase, which probably represents the highest level of sexual adaptation, both for the race and the individual.

Emotional Development.

In the following scheme it is proposed to limit our consideration to the male for the sake of simplicity. In a subsequent lecture some attempt will be made distinguish between the differences of development and general psychology of the sexes. To a large extent the principles will be found to hold good for both sexes, although they sometimes appear to be considerably more clearly shown in the male than in the female.

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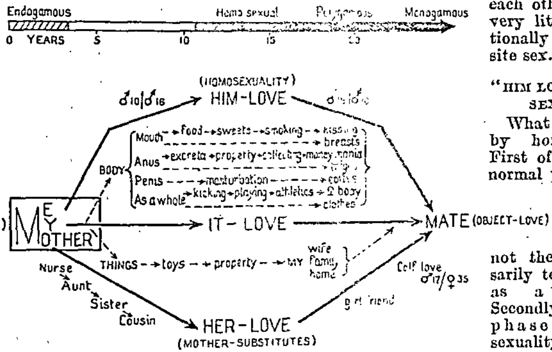
† A word of warning is necessary about these diagrams. They are only of use in such a subject as this if their value, very strictly limited. They are not intended to be actually representative of what occurs, but only to suggest a scheme to simplify our understanding. Any diagrams in these lectures are therefore put forward tentatively as the nucleus of a framework upon which to hang ideas, and too much must not be expected of them.

Let us be quite clear again as to the starting-point of emotional development. Essentially it is a state in which "I love myself," and "myself" is in the condition of undifferentiated ego. The infant's interest in life is determined by what he can get out of it without putting anything into it. He is entirely ego-centric, self-willed, self-loving and self-centred, competitive rather than coöperative, possessive and keenly resentful of dispossession. At the other end of the emotional scale, which may be described as "emotional maturity," the opposite is found to the case. Instead of self-love we have a state of object-love; instead of being self-centred we are object- or cosmo-centred. Altruism has taken the place of self-will and self-love, and a coöperative attitude that of the competitive. A completeness of differentiation has taken place between "me" and "not me" in which the possessive, competitive attitude is replaced by the sharing, coöperative one. All this takes place through normal development and growth.

By what process of development and through what tages is this change achieved? In its simplest orm, the continuity of the process is suggested in he accompanying diagram (Fig. 2). The initial state f undifferentiated ego is represented by the three racteristics of "me," "my" and "mother," at his stage only potentially distinct. This is the rimary goal of the earliest love feeling, and is elf-love. At the other end of the emotional scale the *potential mate*, the goal of sexual object-love. he purpose of the diagram is to show the continuity f development between infantile self-love on the ne hand, which is competitive and possessive, nd mature sexual object-love upon the other hand, hich is altruistic and coöperative. Both of these ust, of course, be regarded as theoretical abstractions bject in practice to individual modification.

As we proceed from left to right of the diagram, evelopment roughly corresponds with the recapitulaon time scale which is placed above it. The principles f *continuity* and *association* must be preserved and order to get from A to Z we have to proceed through intermediate phases represented by the other letters f the alphabet. In the beginning we have a state f "me love," in the end a state of "mate love." What are the intermediate steps? The intermediate ource of emotional interest would be partly "me ove," partly "object-love"—someone who is like me ut not me, yet someone who is also like the mate ut not the mate. This condition is fulfilled by what is called on the diagram "him love," reached in the adolescent phase of homosexuality, say between 10 and 15. "He" is like "me" being of my sex; but he is not me. In the early phase of homosexuality the emotional interest is usually of a younger boy for an older one, say of a boy of 10 for a boy of 16. In the later phase, however, the condition is usually reversed, the boy of 16 tending to be more attracted to the younger boy and the emotional position then corresponds more nearly to what will ultimately become mate love. The younger boy is more nearly in the feminine rôle of dependence. It is characteristic of the homosexual phase of early adolescence that normally boys should only be interested in each other, and have very little use emotionally for the opposite sex.

FIG. 2.—*Emotional Development (Male).*



"HIM LOVE": HOMOSEXUALITY.

What do we mean by homosexuality? First of all, it is a normal phase associated with adolescent development and is not therefore necessarily to be regarded as a perversion. Secondly, the normal phase of homosexuality is independent of any overt sexual expression. This, when it occurs, may be regarded as a pathological expression of a physical sexual factor, but seeing that the normal phase of homosexuality occurs at the same time as the sexual glands are developing, it is not surprising that some overt practice of homosexuality does often take place amongst boys, the most common being, as would be expected, the practice of mutual masturbation, with more or less pronounced differentiation of masculine and feminine rôles.

The following classification of homosexuality may be suggested:—

1. Physiological.
2. Psychological.
   (*a*) Normal phase
   (*b*) Fixated— (1) Sublimated.
   (2) Overt.
   (3) Repressed.

In *physiological* homosexuality, the bisexuality which is physiologically present in all men and women to a greater or less degree usually shows some evidence of those characteristics which are associated with the opposite sex. In the more obvious cases of male physiological homosexuality the physique and behaviour is strongly suggestive of the feminine type, with a tendency towards prettiness, passivity, and timidity. Physiological homosexuality is an individual predisposition and is very rarely amenable to successful psychological treatment.

Psychological homosexuality is the more frequent of the two. In these cases the feminine characteristics are usually lacking, but the choice of object-love remains towards a member of the same sex. Such cases offer a far greater hope of satisfactory treatment.

Psychological homosexuality may be divided into two phases: (*a*) normal phase, (*b*) fixated. The *normal phase* of psychological homosexuality occurs in adolescence about the years 12–15. It is very common, however, in the absence of opportunity for heterosexual self-expression, for the homosexual phase to persist beyond adolescence up to 20 and sometimes 25 or even later. Young men of this age are often aware of the attractiveness of boys of their own sex, while being at the same time also susceptible to feminine attractions. It is as if the usually brief homosexual phase persists in the absence of complete heterosexual opportunity for development. Such men when they marry usually become fully and normally heterosexual without any difficulty. Sometimes heterosexual development does not take place, however, and the condition is then referred to as *fixated*, and is liable to show itself as what is known as *perversion*. The possible causes of such a fixation will be referred to later.

Homosexuality may occur in any of three ways. It may be: (1) sublimated, (2) overt, (3) repressed.

Sublimated homosexuality is a normal and desirable emotional activity of adolescence, and occurs without any overt sexual expression. The tendency of boys to seek only each other's company, to associate in clubs, packs and gangs, and to be completely intolerant of and indifferent to the female sex, is the normal expression of this phase. Sublimated psychological homosexuality is the attitude of the normal schoolboy. After heterosexual development has taken place, sublimated homosexuality remains of great importance as being the tie which binds men in friendship, and through which they enjoy each other's company in clubs, masonic gatherings, and the everyday intercourse of business and social life. The homosexual impulse is therefore of great importance in regulating and inspiring social behaviour.

Overt homosexuality finds active self-expression with a member of the same sex sometimes by the practice of mutual masturbation, often by the more sexually differentiated form of intercrural intercourse. When it occurs this may be regarded as a perversion, but in the absence of the teaching of the elements of sexual hygiene and development it is not really to be wondered at, and need not be considered seriously pathological, although it is certainly morally and psychologically undesirable. The comparatively very rare perversion of intercourse *per anum* is a sign of fixation at the earlier anal-erotic level, which will be referred to later, and is a far more serious though much less frequent problem.

Repressed homosexuality is a matter of great importance because of the unconscious influence which it brings to bear on the subject's attitude towards others who possess a similar tendency. It is only natural to expect that the choice of the scholastic profession is largely determined by a man's degree of emotional interest in boys. It is therefore also to be expected that there should be an increased degree of homosexuality amongst schoolmasters, but without any opportunity for its overt expression. It must be repressed, and this causes certain consequences. It can only be repressed by the individual regarding it as a very serious misdemeanour in himself and therefore in others. Intolerance of homosexuality is a defensive mechanism required to preserve its repression and the observance of moral standards. Schoolmasters as a whole, therefore, are very liable to be unwisely intolerant of masturbation and homosexual practices, and are inclined to regard them with undue severity when they are discovered amongst their boys. Their attitude is inclined to be drastic and punitive and the punishment unwarrantably severe.

Repressed homosexuality presents a problem which it is difficult for the moralists to answer. There may be no outward expression of homosexuality at all. On the contrary, the individual's life may be lived according to the highest moral standards, but it may still persist. A great many marriages are wrecked owing to the fact that one partner is a repressed homosexual and therefore sexually intolerant of the other. Heterosexual union may take place with the subsequent birth of children and yet repressed homosexuality may persist, of which the following is an illustrative case.

CASE O.—Married. Aged 52. Three children. Occupation: master tailor.

Symptoms: Excessive anxiety, intense feeling of guilt and delusions of persecution (paranoia).

History: The symptoms had developed about two years previously in the following circumstances. The patient had been discussing with his friends a case at the Old Bailey of homosexual practice, but he found that he could not get the case out of his mind. He thought people were accusing him of homosexual practices, and, although he had never been guilty of them, he felt an extreme sense of guilt. He imagined that people who passed him in the street were making accusing remarks about him, and this state of affairs caused him intense anxiety.

As a boy he was entirely innocent and ignorant of sexual matters. He was apprenticed to tailoring and his combination of skill as a cutter, with his social aptitude, made his business a great success. People used to go to him as much for his friendship as for the quality and cut of his It may be imagined that his contact with those of his own sex, measuring and fitting, &c., gave him considerable outlet for homosexuality, although it was to him entirely unconscious.

When he married he was quite ignorant of sexual matters and he chose a very timid and invalid wife, by whom he had three children. He was a very enthusiastic social worker in connexion with the church, in which he held at various times all the responsible positions open to a layman. He was very rarely at home in the evenings but always the company of his friends.

Analytical investigation proved the existence of homosexual impulse, which had never been conscious overtly expressed. Its existence seemed, however, to have determined the subsequent insanity from which he did not recover. His sense of guilt applied not to what he had done, but to what he unconsciously wished to do, and the repression of his homosexuality ultimately came out through the mechanism of his delusions.

"HER LOVE."

The lowest line of the diagram (p. 259) is that which proceeds from the beginning "I love my mother," to the end "I love my mate." Again it is neces to preserve continuity and association. "She must be someone who is like my mother but not my mother, like my mate but not my mate. This line preserves the heterosexual continuity and is the line of "her love," the loved object being more or less a *mother substitute*. The transference of emotional regard shifts in turn to various associated mother figures, the first probably being the nurse. The strength and weakness of the position of the aunt in the family lies in her near association to the mother. At a later phase, the cousin is of importance as being the last emotional link with the family. She is still in the family, but is so nearly outside it as to become very near the potential mate. What is known as "calf love" occurs when a boy of 16 or 17 finds his most loved object in a woman of mature years, 35 to 45. The cause of this lies in the fact that her age and maturity remind him of the origin of his love feelings, his mother. In the final adjustment of the man to the mate, there is usually not a little of this "mother-love," but it can easily be too much for matrimonial harmony. "All husbands need to be treated like children sometimes." But a true mating involves a loosening of many bonds, of which the most important is complete unbinding of the maternal apron strings. If all parties in matrimonial experience realised this simple fact of human psychology, many marriages would be happier than they are.

"IT LOVE": PROPERTY FIXATION.

The third potential division of undifferentiated ego comes from "my" love. This may be divided into two: *my body* and *my things.* The part of the body which is of primary emotional significance is *the mouth*, by its association with the maternal breasts and the infantile food-supply. Sucking is therefore an activity of great importance, from which is derived a large amount of emotional gratification. Through what line does this continue and through what associations is it maintained? We find an intense interest during the whole of life in food, exaggerated in some cases such as the glutton, the gourmand and the gourmet, in all of whom the importance of food as a means of gratification is more than it should be. Eating sweets comes into this line of continuity and association, and is particularly an activity of childhood and adolescence. After adolescence the sweet-sucking tendency gives place to that of cigarette and pipe-smoking, which is probably an extension from the primary sucking gratification. A more definitely sexual derivative of this oral source of gratification (known technically as "oral erotism") is kissing, which is of ultimate significance with regard to the mate.

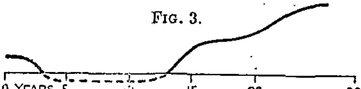
The next part of the body which assumes importance as *a source of gratification is that which is* associated with the alimentary excretory function—i.e., *the anus.* The degree of interest which the infant takes in its excretory function is rather surprising, but it is quite definite. Perhaps this interest has become exaggerated owing to the importance attached to it by mother and nurse from the beginning. It is rather strange to realise the extent to which the excretory function is associated from the beginning with the moral concepts of good and evil. A child is "good" whose bowels function regularly at the behest of mother or nurse, and the child is "bad" who fails to do so. From the first day the child is born, the ordered exercise of this function is expected, and for the most impressive years of life it is associated with the moral qualities of good and bad. Besides the moral aspect there is also a more physical aspect of "well" and "ill," and it is perhaps for this reason that alimentary function may develop an exaggerated importance even in general medicine. If our bowels have not been opened we feel "bad" or "ill," and probably a large part of this feeling has been built up by association and continuity from the values inculcated in us from infancy and childhood. The alimentary function is important, but not to the degree which we unconsciously ascribe to it. To some it assumes an exaggerated importance and the tendency to rebellious independence may show itself in the development of intractable constipation, which is therefore in such cases of psychological and not physiological causation.

It has been suggested that another derivative by association of this "anal-erotic" interest is the habit of collecting, best exemplified in the case of the miser. In this case money has become the symbol of a primary anal-erotic interest in fæces. It is also suggested that all collecting manias originate from this source, although they may be as varied in object and degree as the obsession of the miser, or the highly sublimated interest of the collector of objects of art.

A more definite derivative in simple continuity is the erotic gratification derived from the thighs, corresponding to the oral gratification derived from the breasts, of the loved one.

Early in the second year the *penis* is an object of possessive interest and pride, and it is also sometimes a source of gratification by masturbation in infancy and early childhood. It is again associated in the first place with its excretory function, and children *often take great interest in urination.* It is not, however, until puberty that it becomes of dominant importance, with the physiological development of the gonads. It is the greatest possible mistake, however, to think that sexual development commences at puberty. *The sexual function of puberty is only a continuation of all antecedent sexual function,* which has begun not only in the individual lifetime, but also in a far-distant racial past.

FIG. 3.



Development of sexual function.

The above diagram shows the way in which sexual function and interest tend to be latent from the period of about 3 to puberty, but the sexual feelings of puberty are all derived from earlier infantile sources.

MASTURBATION.

The first thing to recognise in consideration of *masturbation* is, *in the absence of adequate sexual instruction*, its logical inevitability. Nature has been unduly prolific in its endowment of the human race with the sexual procreative urge, and it is in adolescence, with the development of the sexual glands, that we must expect a sudden development of sexual interest and activity. It is possible to keep children ignorant, but not "innocent." The sexual factor is *an inborn urge of great intensity* and, when associated with a healthy curiosity and the normally developing phase of homosexuality, it is not surprising that masturbation should occur in males at some period of their lives. It is, of course, impossible to give accurate figures, but authorities put its frequency at over 95 per cent.

If masturbation is so logical and inevitable, why is it always accompanied by such an intense feeling of *guilt?* Even where it is practised without apparent self-restraint, there is always an underlying guilt sense, and it is owing to this that the practice of masturbation is *psychologically injurious. In spite* of much that has been said to the contrary, it is not *physically* injurious unless practised to excess. It is difficult to define "excess," as this must of course involve an individual factor, but it frequently occurs daily over long periods without giving rise to physical injury, although on the *psychological side* there is always a loss of self-respect and strength of character. It is quite impossible to be so frequently overcome by impulses to do what one feels to be wrong, without suffering in strength and coördination of character. But in spite of this it is quite untrue to say that masturbation *causes insanity. It is primarily* a symptom, not a cause, although it may secondarily become a cause of various degrees of anxiety.

The guilt of masturbation is due to a "transferred affect" from which all our sexual feelings are afterwards inclined to suffer. The origin of these sexual feelings, being associated with the mother, takes its guilt from that source and the guilt of masturbation is a transferred affect from the primary incest motive. It is common for patients, and sometimes boys also, to feel that they have committed the "unpardonable sin," and this association of extreme guilt is derived from the incest motive. In a later lecture it will be suggested that the Holy Ghost is a derivative of the mother figure, and the "sin against the Holy Ghost" is therefore an unconscious link with the primary love for the mother.

We can now understand why the idea of *punishment* is so frequently associated with the guilt sense of masturbation. Well-meaning pamphlets written by ignorant propagandists stress the terrible consequences of the practice of masturbation, which they say causes physical diseases and insanity. Unfortunately it might be said with some truth that these well-meaning pamphlets have done more harm, both physically and mentally, than ever the practice of masturbation has done, by exaggerating fears of punishment which are already present in the individual; unconscious feelings. The unconscious pattern is to connect guilt with punishment and it needs no pamphlet to help us to do so. These pamphlets are only a defensive "projection" from the writer's own feelings of guilt, and they do nothing towards the elucidation of what must always be a difficult problem. There is no doubt that feelings of guilt and fear are inborn tendencies capable of causing great harm, which require to be eliminated, not exaggerated. Exaggerating guilt and fear, however well-meaning, is always harmful and prejudicial to normal development.

THE BODY AS A WHOLE.

There is a very real gratification to the infant in the exercise of his limbs. Happiness is to lie naked with every movement of arms and legs free and unfettered. This satisfaction of free movement is the source from which is afterwards derived much of the pleasure of athletics. Running about on a football field is in continuity with the untiring activity of the child who never wishes to keep still.

The *body as a whole* is a source of pleasure, especially in a state of nakedness. "Exhibitionism," as it is called, is frequently found in small children, who may suddenly be discovered with no clothes on at all enjoying themselves intensely. In early childhood it should not be taken too seriously, because repression of it is liable to give rise to those cases of impulsive exhibitionistic self-exposure, which may occur as a perversion in later life.

The affect may be transferred from the body to the clothes, and the "dandy" is a person whose exhibitionistic self-love has become at least partly transferred to his sartorial elegance. The ultimate conclusion of this line of love interest is fulfilled through the delight in the clothing and body of the beloved.

"PROPERTY FIXATION."

The second division of "my love" is derived from those things which are mine, apart from my body. In the first place these are "my toys," about which the child is inclined, in the beginning, to be exclusive. A great sense of power and personality becomes associated with property however insignificant the property may seem to be. The contents of a boy's pocket, to the superior adult, may seem to be trivial, but the collection of string, stamps, foreign coins, clasp knife, and other "rubbish" represent to him symbols of the utmost significance which are in no way to be treated lightly.

Our sense of personal valuation, which it is very often hard to achieve owing to adult superiority, is easily extended by our possessions, and their quality and quantity may come to be taken as a measure, quite wrongly, of our personal prestige. The person who is so proud of his wireless set is often using it as a means of extending his own personal value. It is not merely a wireless set, it is a part or expression of himself. "It is perfect, it is mine, it is me." Pride of possession in a new car is also to a large extent the expansion of the owner's ego. "It is my car, it is me. It is a very fine car, therefore I am very fine." The person who requires to raise his prestige through the possession of a two-seater coupé Rolls-Royce is probably in need of a great deal of over-compensation for his feeling of inferiority. These are all examples of "undifferentiated ego" and of failure to distinguish between what is "me" and what is "not me."

A certain type of early-Victorian parent was an example of this attitude of property fixation and undifferentiated ego. He adopted the patriarchal attitude of possession of his tribe and permitted very little individuality to its members. His wife decorously submitted; his sons were appointed to their respective professions of the Church, army, or navy; and the daughters were so many elegant appendages to the family tree. "Property fixation" is always possessive and exclusive, denying the individual rights and freedom of others. It is interesting to surmise that this has perhaps been partly the cause of the development of the present commercial system, which would suggest that the state of our economic development has also not progressed much beyond an early emotional level.

The parent of mature emotional development values himself for what he is and each individual member of his family for what they are, independent of himself. He is not patriarchal, dogmatic, or possessive, and is not intolerant of the divergent views of different sexes at different ages.

Narcissism.

It is interesting and useful to give a more definite psychological meaning to the three words—pride, conceit, and vanity. We are *proud* of a heritage which we have not made ourselves—e.g., our school, our family, our country. There is no undifferentiated ego in pride. It is impersonal. We are proud of our bodies, our physique, and our health, but we are not "self-made men." Pride is a consequence of ego differentiation and is therefore entirely free from vanity or conceit. It is the only one of these three words, which, used in this sense, represents an unqualified virtue. True pride is always humble because it is impersonal, and it seeks to gain no personal value out of the object of its pride.

Conceit is associated with shyness and is an over-compensation for a feeling of inferiority. The conceited person takes every object of undifferentiated ego that he can to add to the stature of his prestige. He needs it all, because of his fundamental lack of self-respect. It is not abuse or even criticism that he requires, so much as some measure of real achievement which will add to his self-respect. Conceit and shyness are the twin horns of the dilemma of the inferiority complex and are always signs of an undeveloped and unstable emotional synthesis.

Vanity is the everyday word used for the more psychological one of "Narcissism." It is different from both pride and conceit. It is personal self-love without that feeling of inferiority and its over-compensation, which is characteristic of conceit. The vain person loves himself without criticism, admiring himself in every reflection which he sees and expecting to be admired in the same measure by others. Narcissism is an unqualified expression of self-love and the vain person has not developed far on the emotional scale. He is the god of his own idolatry.

Sex: Its Source and its Derivatives.

Those who wish to criticise modern psychology usually find cause to do so in what they call its sole preoccupation with sex. From what has already been said it is obvious that the general attitude towards sex must be to some extent uneducated and unconsciously based upon motives of guilt and fear. Any true valuation of sex must be independent of unconscious sources of guilt and fear, and will therefore arouse a great measure of unenlightened criticism from those more subject to unconscious motives. On the other hand, a part of the criticism is probably true. Psychology is still somewhat new and unbalanced and it is probable that the sexual factor, neglected for so long, has now received undue importance which time will tend to correct.

Our great difficulty in getting a true estimate of what we mean by "love" is that our use of the word covers such a large range of experience. On the one hand there is the religious conception of love, on the other the sexual, and for the two we use the same short word. Even in sexual love there are the extreme limits of Narcissism and mature mate-love. We can only begin to see the problem in its true perspective when we realise that it is one of growth, the beginning of which shows very wide variation from the end. It is as if both the acorn and the oak tree were described by the same word, in spite of their obvious disparity.

The infantile undifferentiated ego is only interested in self-love, and like the acorn, represents the beginning from which growth develops. Altruistic object-love, with all its extensions and associations in relation to sex, represents the mature development of the oak tree. Sex is only one aspect of emotional development, but it is the source from which arise by continuity and association our feelings for all the people and objects we love. Sex is a limited focus of love and the sex activity is a limited development of the love-life, which is capable of expression in innumerable other forms. The function of sex is the all-important one of reproduction and the continuity of the species, but it would also seem to be only the procreative aspect of a greater theme. The greater theme is the urge for development, growth, progress. Love is the builder, not only of individuals and families, but of races, causes, and of all creative and artistic effort. When we get our perspective of sexual life in some degree of order we can see the beginning, but we cannot see the whole because the ultimate potential development is so far beyond. Sex is not all of love. but it is the beginning, and in order to understand the end it is necessary to know something of the beginning also.

Our view of life generally suffers from being unduly anthropomorphic. Love is not necessarily the tender emotion of our sentimental fancy, as its beginning in intolerant and competitive self-love proves. "Nature red in tooth and claw" is an example of an early phase of self-love, competitive, exclusive, and self-centred, but nevertheless as a beginning it is in ultimate continuity with the highest level of self-development. Love is the force which both preserves and develops the individual, and at the same time defines his attitude towards others. Love is the urge towards all coöperation, synthesis, and growth, and is not in itself necessarily a human characteristic. What we see of love in human life is only its human aspect and what we see of love in sex is only the sexual part of its human aspect. The essential principle of love would seem to be independent of sex, independent even of the human race. Is it not the force, the primal urge, of all that grows and is creative in life?

APPEALS BY VOLUNTARY HOSPITALS.

In The Lancet of Dec. 27th, 1930 (p. 1425), ppeared a tabulated list of voluntary hospitals making special appeals. The list was known to be ncomplete, and it was stated that a further list would be published if notice was received from other hospitals appealing for funds for some special purpose. The following hospitals have asked to be included in this list.

The list shows that apart from appeals for maintenance, the voluntary hospitals throughout the country are in need of well over three million pounds for developments, extensions, and, in some cases, for entire reconstruction.

TABULATED LIST OF HOSPITALS WITH SPECIAL APPEALS.

Name of town and hospital.	Date of appeal.	Amount required.	Amount received.	Purpose.
		£	£	
SHFORD Hospital	1925	40,000	34,700	Debt on new hospital.
BEXHILL Hospital	1926	33,000	24,000	Debt on new hospital.
BIRMINGHAM Hospital Centre ..	1930	1,250,000	590,000	New hospitals and medical faculty.
ROMER and District Hospital ..	1929	20,000	14,500	New hospital.
DERBY: Derbyshire Hospital for Sick Children	1928	22,000	11,000	New wards and new nurses' home.
ONDON:				
The Princess Louise Kensington Hospital for Children..	1929	25,000	3,000	New nurses' home and administrative offices, to free ward space for 42 cots.
Tavistock-square Clinic for Functional Nervous Disorders	1930	400,000	7,000	Extensions.
MIDDLESBROUGH: North Ormesby Hospital	1929	30,000	28,500	New operating theatres and wards.

SPECIAL ARTICLES

THE SOURCE OF INFECTION IN PUERPERAL FEVER.

IN 1928 the Scottish Board of Health published a report by Dr. J. Parlane Kinloch, Dr. John Smith, and Dr. J. A. Stephen, entitled "Maternal Mortality in Aberdeen, 1918–1927, with Special Reference to Puerperal Sepsis." The reporters concluded, inter alia, that in puerperal sepsis, as in other streptococcal diseases, the essential mode of infection is by contagion (the term "contagion" being understood to embrace all the channels by which any droplet or spray infection is spread); and that an important factor in contagion is a streptococcal carrier condition in physicians, nurses, or patients. The same department now publishes a report by Dr. Smith on a routine bacteriological investigation of 221 cases of puerperal fever and 25 cases of septic abortion occurring in Aberdeen over a period of eight years, and an inquiry into the source of infection in 18 cases of puerperal fever and three cases of septic abortion.[1]

For eight years all cases of puerperal fever admitted to the Aberdeen City Hospital for Infectious Diseases have been made the subject of a routine bacteriological investigation. Blood and uterine cultures were made and any pus obtained was examined. The organisms secured were identified by the usual morphological and cultural tests, and when necessary the hæmolytic activity was examined after growing in 10 per cent. horse serum broth for eight hours at 37° C.

Of 196 cases the infecting organism was *Streptococcus hæmolyticus* alone in 120 cases, and *S. hæmolyticus* with other organisms in a further 29 cases. Three cases had sterile uterine swabs, and the remaining 44 showed *Bacillus coli*, *B. proteus*, staphylococci, gonococci, pneumococci, diphtheroids, and *S. viridans*, alone or in various combinations. The blood cultures from 177 cases showed *S. hæmolyticus* alone in 40, *B. coli* in 2, and *S. viridans*, *B. alkalescens*, pneumococcus (Type IV.), and *Staphylococcus aureus* in 1 each. Pus from 44 cases showed *Streptococcus hæmolyticus* alone in 36 and the same organism with staphylococci in 3, with *B. coli* in 1, and with both *B. coli* and *S. viridans* in 1. Of the 3 remaining, 2 showed staphylococci only and the other *B. fæcalis alkaligenes*.

Thus, 76 per cent. of cases showed *S. hæmolyticus* in the uterus; 22·9 per cent. showed it in the blood, and of those with secondary suppurative processes 93·4 per cent. showed it in the pus. Of the 46 cases with a fatal issue, 34 were infected with the hæmolytic streptococcus and 11 had sterile blood cultures; but of the latter, 6 yielded the organism post mortem. In 43 out of the 46 cases it was obtained from one source or another.

Of 24 cases of septic abortion, 4 died; the uterine cultures in 11 cases showed *S. hæmolyticus* alone, in 3 more the same organism with others, and various other organisms in 11.

There can, therefore, be no doubt in the present series of the rôle played by *S. hæmolyticus*.

SOURCE OF THE ORGANISM.

Apart from the work of J. Nixon and H. D. Wright,[2] no effort seems to have been made to trace the source of infecting organisms in sporadic cases by modern bacteriological and immunological methods. In this investigation, as soon as *S. hæmolyticus* was found in a uterine culture, the various secretions and mucous membranes of the patient were examined, and throat and nose swabs were obtained from any persons who had been present at the confinement. When the uterine solution showed *B. coli*, specimens were obtained from the patient, but not from the attendants. The materials were cultured directly on sheep's-blood agar plates and in sheep's-blood broth. If the initial plates did not show the organism after incubation at 37° C. for 24 hours, the blood-broth cultures were also plated on blood-agar. The strains were then examined for their hæmolytic activity and their action in carbohydrate media. To prepare agglutin ing sera numerous rabbits were immunised with kille strains of *S. hæmolyticus* and *B. coli*. Compl serological identification of the strains was established.

The report gives details of the examination in each of 21 cases, 18 of them being puerperal fever and 3 being septic abortion. The cultural characteristics of all strains of *S. hæmolyticus* were fully investigated and the results are given in a table. The majority gave the typical fermentation reaction—viz., acid in media containing saccharose, lactose and salicin, and no acid in media containing mannite inulin and raffinose. Four strains from two sources produced no acid in lactose but were otherwis similar to the rest in their sugar reactions. The coliform strains showed considerable variation in their action on saccharose, but otherwise were much alike in that they produced acid in lactose, salicin and dulcite, and no change in adonite. In litmus milk they produced acid and clot, and they liquefied gelatin. They failed to grow in Koser's medium, produced indol but no methyl-carbinol, and in only one instance failed to give a positive methyl-re reaction. The cultural characteristics of the strains were, therefore, of only slight value in indicatin

Case	Disease.	Infecting organism.	Source of organism with serological characteristics identical with uterine strains.
1	S. A.	*S. hæm.* and *B. coli.*	*S. hæm.* from patient's nose, sa *B. coli* from patient's intestin
2	P. F.	*S. hæm.*	Nose of nurse.
3	"	"	Throat of doctor.
4	"	*S. hæm.* and *B. coli.*	*S. hæm.* from doctor's throat, sa *B. coli* from patient's rectum.
5 6	"	*S. hæm.*	Both from throat of same nur
7	"	"	Nose and throat of student.
8	"	"	Not determined.
9	"	"	Infection of nail-bed of docto thumb.
10	"	"	Not determined.
11	"	*B. coli* only.	Patient's urinary tract.
12	"	*S. hæm.*	Throat of nurse.
13	"	"	Doctor's throat.
14	"	*S. hæm.* and *B. coli.*	*S. hæm.* from doctor's throat s *B. coli* from patient's urin tract.
15	"	"	Septic focus on patient's finge
16	S. A.	*B. coli.*	Patient's intestinal excretion.
17	P. F.	*S. hæm.*	Not determined.
18	"	"	Throat of nurse.
19	"	*B. coli.*	Patient's fæces.
20	"	*S. hæm.*	Throat of doctor.
21	S. A.	"	" "

S.A. = Septic abortion. P.F. = puerperal fever. S. hæ *S. hæmolyticus.*

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[1] Causation and Source of Infection in Puerperal Fever. By J. Smith, M.D., D.Sc., M.R.C.P., D.P.H., Department of Health for Scotland, Edinburgh. H.M. Stationery Office. 1931. Pp. 54. 1s.

[2] THE LANCET, 1929, i., 1242.

the common source of their origin. A study was undertaken to determine the incidence of the various serological types, and the results showed very diverse strains of *S. hæmolyticus* and of *B. coli*. The results are summarised in the above table.

Thus, in a group of 18 cases infected with *S. hæmolyticus*, the source of infection was determined in 15, of which 13 were cases of puerperal fever and 2 were cases of abortion. Of the former the strains were found to come from an extrinsic source in 12, and in every case but one that source was the throat or nose of the doctor, student, or nurse in attendance. In only 1 case could the infection be regarded as autogenous, and this patient was suffering from a streptococcal infection of the hand. In the 2 cases of abortion the source was extrinsic in one and intrinsic in the other, the organism being found in the doctor's throat in one case and in the patient's fæces in the other. Of the three cases of *B. coli* infection, two were puerperal fever and one an abortion with *B. coli* septicæmia. In one case of puerperal fever the organism was also found in the urine, and the other case it was found in the fæces.

Importance of Carriers.

This investigation, therefore, again points to a arrier as the source of puerperal infection, the carrier being usually free from any gross signs. The impression left is that the majority of cases are produced by he physician or nurse actually introducing the treptococcus in the course of examination or manipuation. In all the 21 cases of puerperal sepsis the æces and urine were examined, and in not one was a hæmolytic streptococcus found. Throat and nose wabs from one patient, nine doctors, and five nurses howed the organism.

The problem of prophylaxis is therefore the problem f the carrier, about whom little is known at present. nfection could, at any rate, be prevented if doctors, midwives, and nurses took appropriate precautions, uch as the wider use of masks and the more effective ntiseptic ritual for the hands recommended in the ecent Interim Maternal Mortality Report of the Ministry of Health, 1930. The patient herself should e examined for septic foci and material should be ubmitted to bacteriological examination, and if the octor has any significant septic foci he should also ubmit material. Infection by *B. coli* and other fæcal ypes seems likely to be carried up the vaginal canal y examination. H. W. Mayes has suggested erilisation of the thighs, perineum, and vulva, gether with the introduction of 4 c.cm. of 4 per nt. mercurochrome 220 soluble into the vagina. his report suggests that maternity beds in hospitals hould be isolated by metal or glass screens, and hat no patient should be examined or treated in he common ward. Labour and treatment should be onducted with modern aseptic surgical technique, cluding adequate masking.

MEDICINE AND THE LAW.

Burns from Hot-water Bottle: Unsuccessful Action against Surgeon and Anæsthetist.

In the latest attempt to hold an operating surgeon able for injuries unfortunately caused to the patient y burns from a hot-water bottle, there was a chance hat Mr. Justice McCardie would pronounce some uthoritative ruling on the legal position which would ave given valuable protection to practitioners in milar circumstances in the future. The case, however, was settled before the defence was opened. It had become clear that the operating surgeon and anæsthetist could not possibly be held negligent, but this satisfactory result is only half the battle so long as practitioners can be dragged into the law-courts at great expense of time and money to defend themselves against allegations of negligence which ought not to succeed. In the recent case the proprietress of the nursing-home had admitted liability and had paid £600 into court—though of this latter fact the jury would be unaware. The surgeon and anæsthetist strongly denied negligence and the surgeon counter-claimed for £200 for professional fees. Under the terms of settlement the plaintiff took out the £600 in satisfaction of her claim for damages and an agreed sum for her costs was endorsed on counsel's briefs. She abandoned her action against the surgeon and anæsthetist, who were consequently awarded costs; it is understood that this award will not be enforced and that the counter-claim for fees, though successful, will also be forgone out of sympathy for the plaintiff's most regrettable injury. In announcing the settlement, Mr. Norman Birkett, K.C., made it clear that there never had been any complaint of the two practitioners' skill, care, and judgment. The allegation of negligence against them was based on their supposed duty to prevent such an accident as occurred. The facts and the answers of the plaintiff's own witnesses in cross-examination had made Mr. Birkett's allegation difficult to prove. A rubber hot-water bottle had been used to warm the operating-table in a nursing-home in North Wales. During the operation a nurse gave the bottle to a maidservant with instructions to fill it and place it in the patient's bed where there were already two stone hot-water bottles. After the operation the patient was carried to her bedroom on a stretcher; before she was moved from stretcher to bed, the two stone bottles were taken away but it was not perceived that the rubber bottle was in the bed beneath a mackintosh sheet and a draw sheet. The resultant burning (at the end of the spine and across the buttocks) was very serious; 18 months later the burn was not completely healed, and there remains a likelihood of permanent disability. In cross-examination, the nurse (a witness called by the plaintiff) agreed that it was the nurse's duty to look after hot-water bottles and to prevent patients from burning; she had never known an operating surgeon take part in filling hot-water bottles; if the surgeon did such a thing, she would regard it as an interference with the nurse's duties. As regards the anæsthetist's responsibility, the nurse agreed that the eyes of the anæsthetist must, like those of the surgeon, be always on the patient. When the rubber bottle was given to the maidservant, said the nurse, both surgeon and anæsthetist were fully engaged in attending to the patient. These answers, naturally, though they emphasised the importance of great care in the training of nurses, did little to assist the plaintiff's case against the two practitioners.

It is possible that some day the medical profession may undertake some collective system of insurance against patients' injuries whether or not the injuries are caused by circumstances over which the practitioner has control. The prospect is unlikely, though the legal profession (under conditions which are not wholly parallel) seems ready to consider some plan of fidelity guarantee by which solicitors as a whole will insure an individual client against the frauds of an individual solicitor; indeed in New Zealand contribution to an indemnity fund for compensating defauded clients is already obligatory upon all legal practitioners. Meanwhile, it seems scarcely fair that surgeons and anæsthetists should be the target of charges of vicarious negligence in hot-water bottle cases largely because the plaintiff's action against maidservant, nurse, or nursing-home is not likely to yield substantial damages in hard cash. Parliament would be asked in vain to find time to pass even a one-clause Surgeons' and Anæsthetists' Protection Bill to limit liability for other people's unfortunate oversights. The only remaining hope is that our judges will some day take judicial cognisance of the routine of the operating-theatre and will promote procedure by which actions against surgeon or anæsthetist in such circumstances as we have described may be struck out at the earliest possible moment. Reading between the lines of the report of the case under discussion, one may reasonably assume that the judge brought strong pressure to bear upon the parties in the successful endeavour to obtain a settlement. The action was one in which the plaintiff's misfortune was sure of popular sympathy; it was the more necessary to see that the defendants' rights were not prejudiced on that account. Plaintiff's counsel, in announcing the settlement, admitted that he could not substantiate the charge of negligence against surgeon and anæsthetist. This means that, if the case had proceeded to a finish, the two practitioners must have been awarded costs, the counterclaim for fees must have succeeded with costs, and the judge would presumably have given the jury a direction on the non-liability of the practitioners which would have been important for future reference. Instead of this result, the counterclaim for fees (part of which must have represented out-of-pocket expenses) and the awards of costs are nullified by an agreement not to enforce them. It is good that all charges of negligence against surgeon and anæsthetist are frankly and fully withdrawn; it is clear that the withdrawal is not part of a compromise on the issue of negligence. Everyone will admire the generous forbearance of the two practitioners, but many will regret two features of the case—first that, in the benevolent atmosphere created by the judge's intervention, a settlement was partly purchased out of the pockets of innocent parties who were entitled to be indemnified, and secondly that the outstanding point of principle for which the two practitioners stood was not recorded in a judicial ruling.

The Jury of Matrons.

If (as happened the other day) a pregnant woman is sentenced to death, she is entitled to plead pregnancy. If the fact of pregnancy is established, she is entitled to be reprieved—not for her own sake but for the sake of the child which may be born. For the purpose of determining whether the woman is pregnant or not, there must be an inquiry by a panel of 12 matrons (or "discreet women") chosen from the women present in court. The procedure is of
but of the latter uity. The Commissioners who were
In 43 out of the ft a criminal code 50 years ago
source or another h the anachronistic jury of matrons
Of 24 cases of sep n examination by one or more
cultures in 11 case ractitioners. This sensible sug-
in 3 more the same or not yet been adopted. The
other organisms in 11. hardly defensible. More than
There can, therefore, us has returned the wrong
series of the rôle played by the mistake would have
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e historical development
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ed between the state
and is "barely with

child" and that of the woman who has conceived "with quick child," as though the old idea were true that the fœtus is not alive until the woman "quickens." Since in any case the jury of matrons would not nowadays be allowed to come to a decision without the assistance of medical evidence, it is the more desirable that the question of the prisoner's pregnancy should be decided directly by medical testimony instead of being referred to a tribunal which is a curious survival of times when medical knowledge was neither far advanced nor easily available. It may be added that the decision of a jury of matrons is also obtainable in civil cases when there is a risk of imposture in matters of legitimacy and to prevent frauds through suppositious children. In civil cases, however, the idea of requiring the services of 12 matrons or discreet women is even less justifiable than in criminal proceedings where there is at any rate some analogy with the theoretic protection of trial by a jury of one's peers.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

DEFICIENCY DISEASE.

MUCH vague ill-health amongst the poorer population in India is due to diet which is deficient in one o more vital elements, and it is probable that many actual outbreaks of deficiency diseases pass unnoticed. Beri-beri in particular must occur fairly frequently, if the facts were known. Some cases have recently come to light in the house of a medical practitioner in Noakhali district. Of 14 inmates 8 were attacked, a child of 18 months, who was living on milk, and five others who only took food occasionally in the house, escaping. A similar outbreak occurred in the house of a neighbouring cultivator. In this, out of 12 inmates, all but one, also a child living on milk, were attacked. The cause is stated to have been the use as a staple diet of milled rice, which was stor in the dark on a damp mud floor. Dr. Margare Balfour, who has been investigating infantile mortality in Bombay, has drawn attention[1] to another possibl manifestation of the results of deficient diet. Sh has come to the conclusion that prematurity is mor frequent in India than in England, and thinks tha it may be an important factor in the higher infan mortality. A remark in the report of the healt officer of Bombay is quoted to the effect that debilit and prematurity play a great part in the excessi number of deaths in the first four weeks of life. A investigation of the diets of women of differen classes in Bombay by Wills showed that the food the women of the hospital class who had give birth to premature children was deficient in vitamin A, B, and C, with a specially marked deficiency in The diet of these women consisted chiefly of polishe rice and white bread. Miss Balfour suggests that deficiency may lead either to weakness of the ger cells, a failure of the growth impulse of the fœtus, premature thinning and separation of the decid membrane.

THE CLEARING OF JUNGLE TRACTS.

There is a very old belief that tropical forests always associated with malaria, and that the cleari of jungle tracts is the first step in their improvemen from a sanitary point of view. Mr. M. O. T. Iyeng

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¹ Causation and Source of Inf
By J. Smith, M.D., D.Sc., M.R.C.
Health for Scotland, Edinburgh. H
Pp. 54. 1s.

[1] Indian Medical Gazette, November, 1930.

entomologist to the Public Health Department of Bengal, in a recent paper, examines this question, and comes to the conclusion that, in Bengal at least, primitive jungle—i.e., uninhabited land covered with orest trees, shrubs or brushwood tall and thick nough to produce shade, and prevent much exposure f the ground to sunlight—is more free from malaria han are adjacent clearings. He points out that ungle anophelines, which breed and live inside the orest, and normally feed on wild animals, have rdinarily very poor chances of getting an effective eed of malaria, and the prospect of transmission to uman beings is remote. Moreover the species most frequently found within the uncleared jungle re not carriers, whereas directly clearings are made . *ludlowi* and other notorious carriers appear. It eems to be a fact that the bad reputation of jungle r malaria is due more to clearings and their human habitants than to the primitive conditions. One the tragedies of tropical sanitation in the past has een the expenditure of large sums of money in earing forest areas, with the idea that the public lth would thereby be improved. In the Sunder- s, where Mr. Iyengar conducted part of his searches, the forest officials often live in small useboats, anchored in creeks and channels, and found that the best way to protect himself against alaria was to take his boat before sunset into the ncleared jungle area, and spend the night there.

A CASE OF POISONING.

The Indian medical jurist often has curious problems unravel, and they are not made simpler by the evalence of poisonous reptiles. It is generally lieved that a large proportion of the many thousands deaths which are returned annually under the ad of snake-bite are really due to homicidal isoning, or other crime, which can seldom be ought home in the country districts, owing to the actice of cremation and other reasons. An account the *Times of India* (Mail Edition) of Dec. 13th, 30, runs:—

> "An extraordinary case of poisoning in which 45 rsons have lost their lives is reported from Erode. The ctims of this terrible tragedy were students residing in e hostel of the London Mission High School at Erode d a cook. They took their midday meal as usual recently, t shortly after died one after the other in spite of medical l. The hostel cook who prepared the meal also died as a sult of eating it. A poisonous reptile (called *aranai* in mil), which is stated to have been found in the soup rved to students, is believed to have been the cause of eir deaths. There is a saying in Tamil that the bite of *aranai* means instant death."

do not know what *aranai* stands for but, so far I am aware, snake poison, when taken by the outh, is decomposed on entering the stomach, and s no poisonous effect, while lizards are innocuous. hat was the sequel of this fatality is not reported, t presumably it would be a case for police inquiry.

THE INDIAN STUDENT.

The undergraduate of Indian descent comes in for ood deal of criticism, which is sometimes of a rather friendly nature. He is far removed from the average glish student in many of his most prominent aracteristics, and it is therefore hardly fair to judge m by the same standards, apart from those arbi- trily set in examinations, where he is well qualified hold his own. One of his most obvious traits is a ndency to the abstract rather than the concrete. om the medical standpoint one would expect him make a better physician than surgeon, and this think is usually true. Treves once said that every edical student ought to have a course of carpentry. If this applies in England it is still more necessary in India. An English student at all events comes to the dissecting room having learnt in childhood to avoid striking his thumb with a hammer, and with some knowledge of a knife and fork. A high-caste Hindu has had neither of these preliminary advantages, and it is to his credit that he sometimes does well at games. That he has many other good qualities is testified to by Sir Ross Barker, in his convocation address at the Agra University. From a very extensive acquaintance Sir Ross said that he was a profound believer in the qualities, both mental and moral, of the Indian undergraduates of the present day. He spoke of their industry, grit, and perseverance, shown often amidst great difficulties and obstacles, and said that he admired especially their good temper and philosophical demeanour under adversity.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

PRECAUTIONS AGAINST INFLUENZA.

The Secretary of the Department of Local Government and Public Health has addressed to all public health authorities in the Free State a letter advising the adoption of protective and preventive measures against influenza. He points out that, while there is neither a heavy enough incidence of influenza nor a heavy enough mortality to give rise to immediate anxiety, yet plans should be ready for dealing with any threatened outbreak, for the disease has recently occurred in several parts of the country. Sanitary authorities are recommended, in conjunction with their medical officers of health, to formulate schemes for the coördination of all medical, nursing, and public health services in their districts. In particular, provision should be made for medical assistance, including nursing, for patients suffering from pneumonia, whether due to influenza or not. Hospital accommodation should be in readiness for the treatment of sudden or severe cases of influenza. The sanitary authority might consider the question of enlightening the public, by means of leaflets and posters, in regard to the measures to be adopted for personal protection. It is suggested that endeavours should be made to establish a voluntary system of notification of influenza, which is not at present on the list of diseases compulsorily notifiable. Attention is drawn to the serious pulmonary, renal, and nervous complications and sequlæ which may be associated with even a mild attack. Advice is given about the avoidance of overcrowding in public assemblies, the propriety of closing schools during the prevalence of an epidemic, and the social self-isolation of infected households. Warning is given of the special danger of indiscriminate spitting.

HOSPITAL CHARGES TO INSURANCE COMPANIES.—The Yorkshire voluntary hospitals committee has decided that the payment made by insurance companies in respect of motor accident cases should be not less than 11*s.* 6*d.* per day.

HONOUR TO A MEDICAL MAN.—The Bangor city council have conferred upon Dr. Griffith Evans, Bangor, the honorary freedom of the city in recognition of the distinguished services rendered by him to the cause of science. Dr. Evans is 96 years of age. His work as a medical man and veterinary surgeon in India and in the United States had reference to the discovery of the trypanosome, the investigation of an infection among army horses in India, which he found was due to anthrax, and in 1880 the cause of "surra," a disease very fatal to horses and camels in the Indian Army.

CORRESPONDENCE

A SUGGESTED CAUSE OF NEPHROSIS.

To the Editor of THE LANCET.

SIR,—After reading the lecture upon nephrosis by Dr. T. Izod Bennett, published in your issue of Jan. 17th (p. 115), I beg to offer the suggestion that some of these conditions of nephrosis may be purely bacterial in origin. During the war in the trenches one saw cases of nephritis which developed suddenly, with no symptoms except œdema of the face and feet, and a feeling of lassitude. These cases went at once to hospital and one saw them no more. During 1917–18 when in charge of a war hospital at home, I had cases admitted with similar symptoms to those which I had noticed in the trenches. Amongst some 1400 odd patients admitted from January, 1917, to November, 1918, I had 16 such cases under my care, with œdema of the face and feet, albumin in the urine, and, microscopically, leucocytes, hyaline and granular tube-casts, and cocci. No complaints, beyond feeling tired and slack, were made, and no blood pressure was over 140 mm. Hg.

The urine was examined as follows. Immediately after being passed into a sterile flask, 20 c.cm. was centrifuged in sterile glasses, the supernatant fluid was poured off, and the residue distributed between two large sloped agar tubes, and incubated. In every case many colonies of cocci grew, never less than ten colonies, frequently more. These colonies resembled *Staphylococcus aureus*, but when placed in normal saline to make a vaccine these organisms did not make a uniform emulsion, such as *Staphylococcus aureus* does, but required beads to break them up. I regret that no further bacteriological examinations were made with these cocci, owing to the pressure of work. The vaccine, autogenous in every case, given in very small doses to begin with, proved most satisfactory. In every case the œdema cleared up, and the bacilluria and albumin disappeared. The only other treatment adopted was rest in bed, and a dietary largely composed of milk, which was so unpopular that it was rarely persisted in for more than a week. These 16 cases were all discharged within two months of admission and I lost sight of them.

At the end of November, 1918, a nursing sister who had served in France since 1914 was invalided out of the service, as a case of chronic nephritis. She had been in hospital for three months under treatment, and her œdema had disappeared, but when I saw her she felt unfit and lacking in energy, and as she was warned that she would not be able to follow her vocation of nursing she was naturally depressed. The urine in her case was drawn off by catheter. It contained a large quantity of albumin, while hyaline and granular tube-casts, many leucocytes, and a few cocci were seen on microscopic examination. Her blood pressure was round 130 mm. Hg. The patient was treated with an autogenous vaccine, and within six weeks the symptoms had cleared up. She is to-day in active practice as a nurse and has had no return of the nephritis. About the same time that I saw the nurse I was asked by a colleague to examine a specimen of urine microscopically. The patient, a man of about 50 years of age, of great physical and mental ability, had developed nephritis, and the prognosis given him was not hopeful. The urine showed a fairly acute condition, because, in addition to the symptoms in the previous cases, a few red blood corpuscles were present. The cocci in this case I believed to be *Staphylococcus aureus*: I suggested trying an autogenous vaccine, which was done with good results. The condition cleared up in two months and the patient is as fit to-day as he was previous to the attack of nephritis.

Since these cases passed through my hands I have had during the past 12 years seven cases of œdema with albumin, leucocytes, tube-casts, and bacilli in the urine. There were no symptoms except œdema, and no symptoms of arterial tension except in one case. The bacteriological findings in these seven cases were as follows:

Streptococci and colon bacillus ..	1 case.
Staphylococcus aureus	3 cases.
Colon bacillus	2 "
Micrococcus tetragenus	1 case.

All these cases under autogenous vaccine treatme cleared up, except the case with tetragenous infecti The patient is a man of 65 years of age, his arte tension is 200 mm. Hg, and his arteries atheromatous.

My only excuse for recording these cases is the that so far as I have read no one has suggested these cases of nephrosis may be of bacterial origin.

I am, Sir, yours faithfully,

Murthly, Perthshire, Jan. 19th, 1931. L. C. BRUCE.

HÆMATEMESIS AS A SYMPTOM OF PEPTIC ULCER.

To the Editor of THE LANCET.

SIR,—Writing in THE LANCET of Dec. 20th, 1 (p. 1346), Mr. Basil Hughes remarks that in 25 experience he can recall only two cases of true rhage from a gastric or duodenal ulcer. He goes to say:—

> "Such experience shakes one's faith in hæmatemesis trustworthy symptom of gastric or duodenal ulcer, text-books still proclaim it and students are still taught If it is a symptom, it is a very rare symptom; such my surgical and post-mortem findings."

As it seemed that such a statement might misleading to the medical student, the records of of gastric ulcer treated in the wards of St. Thom Hospital during the year 1929 were consulted. T evidence available apparently vindicates the tex books. A total of 184 cases were classified as gast ulcers; 20 cases were regarded as "non-prove in the absence of barium meal examinations; in other cases the diagnosis was made on the &c., and on the presence of suspicious X ray such as pyloric spasm and local tenderness manipulation. In the remaining 139 cases diagnosis was considered to be beyond cavil on following evidence:—

(1) 105 cases were verified either by the presence of definite Haudek crater on barium meal examination, or the finding of an ulcer on operation.

(2) 21 cases were operated on for perforated ulcer (3 di

(3) 13 cases were verified at autopsy.

Now of these 139 cases a history of hæmatem was obtained in 42—i.e., an incidence of 30 per at least, leaving out a good many suggestive unproved cases. Of the cases examined at au eight had died as a direct result of hæmatemesis 6 per cent. of the proved cases. In seven of these eroded artery was easily demonstrated at the or in the wall, of the ulcer. The remaining showed a lesser curve ulcer with no bleeding po but immediately opposite, on the greater curve, was a circular area of acute hæmorrhagic gastritis.

It is always risky to argue from statistics or from personal experience, but these figures seem to indicate that it is still legitimate to proclaim hæmatemesis as one of the most trustworthy symptoms of gastric ulcer. I am, Sir, yours faithfully,

THOMAS MORTON,
Medical Registrar, St. Thomas's Hospital.
Jan. 20th, 1931.

INSULIN PHOSPHOTUNGSTATE.

To the Editor of THE LANCET.

SIR,—It was with much interest and great admiraion of the energy of Dr. R. D. Lawrence that I read iis note in your last issue (p. 184). A month or two go I referred to the fact that I was making observaions on this substance and that any way its use for ny lengthy period could not be advocated until vidence was forthcoming that it was innocuous. his cannot be determined for some time. If the hosphotungstate of insulin proves beneficial in abetes (I am not in a position to make any assertion the moment) I should expect its effect to be quite ifferent to that of a soluble salt injected under the kin, because I imagine that its action would be due the insoluble salt being passed through the intestinal all, undergoing decomposition in the tissues and hus liberating insulin. The latent period would be onsiderable. Again the exact nature of the preparaon may have an effect. If dried phosphotungstate e given in suspension it may not have the same ffect as the salt which has not been dried. This ct may be illustrated; I found that if the tannate insulin prepared by adding tannic acid and buffer lts to a solution of insulin hydrochloride were ijected subcutaneously there was only a slight elay in its action, whilst Dr. Hagedorn told me that e prepared and dried tannate of insulin which though containing active insulin did not lower e sugar in the blood of animals which were injected ith a suspension.

I have every confidence in the accuracy of Dr. awrence's observations, but cannot accept his ghtning conclusions as proven.

I am, Sir, yours faithfully,

Monks Corner, Marlow, Jan. 24th, 1931. O. LEYTON.

To the Editor of THE LANCET.

SIR,—It is quite hopeless to expect any internal sulin ever to produce acute hypoglycæmia, or to ppose that insulin and hypoglycæmia are inevitably ked. It is not the insulin itself, but its sudden plication by subcutaneous injection, that produces ute hypoglycæmia. Even then hypoglycæmia can prevented either by previous tying of arms and gs (Bürger and Kramer), or by making the injection ry slowly, drop by drop. Insulin produces hypoycæmia only where it gets a chance of operating the muscular glycogen. This chance is handicapped hen the injection is made intravenously and still ore when insulin is given by mouth. In this case first reaches the hepatic glycogen (Collazo and ubino).

In order to demonstrate the influence of insulin ken internally on the concentration of the bloodgar special precautions must be taken. The nount of the hepatic glycogen must first be minished, otherwise its virtual hypoglycæmic wer will be masked by the glycogen mobilised in e liver. For this purpose H. N. Mukherjee has recommended making the diabetic fast completely for at least 16 and the rabbit even for 24 hours before giving them insulin by mouth. Dr. Lawrence does not make it clear if this precaution was observed or not. The precaution is indispensable only for the demonstration of acute hypoglycæmia, not of the antidiabetic effect of insulin taken internally. This effect is characterised by a slow but steady increase of the patient's tolerance for carbohydrates within the first ten days of regular treatment with internal insulin, as has been pointed out before (see THE LANCET, 1928, i., 159).

I am, Sir, yours faithfully,

Saarbruecken, Jan. 25th, 1931. F. W. FORNET, M.D.

ACUTE TOXIC HEPATITIS AFTER ACRIFLAVINE.

To the Editor of THE LANCET.

SIR,—A large number of drugs are known to be capable of causing liver damage, and Dr. Cullinan in your last issue has called attention to the possible danger in this respect of acriflavine. This has long been used as an external antiseptic, and has also been given by mouth without harmful effects. More recently it has been administered by intravenous injection in the treatment of gonorrhœa. In a series of 100 cases of gonorrhœa treated by intravenous injection of 10 c.cm. of 1 per cent. acriflavine three times weekly three cases of jaundice occurred. The average amount of acriflavine given was 0·78 g. The average time of onset of jaundice was 112 days after the last injection, and its average duration 46 days. In all cases jaundice was well marked and was catarrhal in type with enlargement of the liver and, in one case, of the spleen also. Constitutional symptoms were severe. The effect of the acriflavine on the urethritis will be described at a later date. Yellowness of the skin may occur very soon after the intravenous injection of acriflavine, but this is transient and not due to hyperbilirubinæmia, since the quantitative van den Bergh reaction is normal. It should be noted that the icterus index as a test for latent jaundice is fallacious in these cases.

I am, Sir, yours faithfully,

C. ALLAN BIRCH,
Medical Registrar, Liverpool Royal Infirmary.
Jan. 24th, 1931.

To the Editor of THE LANCET.

SIR,—Dr. E. R. Cullinan's letter raises two issues.

(1) Is acriflavine taken orally "justifiable" in the treatment of gonococcal urethritis? My own observation during five years' use of acriflavine tablets gr. ½, administered orally three or four times a day, for that condition, gives the answer—yes.

(2) Is acriflavine taken orally "unjustifiable" by reason of the appreciable risk of its causing toxic jaundice? During the last five years over 2500 of my male patients suffering from urethritis, in the majority of whom the gonococcus was demonstrated, have taken by mouth for periods varying from two weeks to five months, continuously, an acriflavine tablet gr. ½ three to four times a day. In all of them the drug was absorbed—as the colour of the urine clearly showed. (In fact, over 100,000 tablets have been issued to these patients.) One man, only, after eight weeks on acriflavine gr. ½ t.i.d. per os developed slight jaundice four weeks after ceasing to take the acriflavine tablets. This jaundice disappeared after one week's out-patient treatment by mild laxatives.

Six men only complained of nausea which ceased on discontinuing the acriflavine by mouth.

I therefore submit that within the above-stated therapeutical limits the danger of toxic hepatitis from acriflavine per os is negligible.

I am, Sir, yours faithfully,

H. M. HANSCHELL,
M.O. in Charge, V.D. Clinic, Seamen's Hospital,
Jan. 27th, 1931. Royal Albert Dock, E.

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—The ideal "safe milk" is free from pathogenic organisms and retains its nutritional values. It can be obtained from healthy tubercle-free cattle and is drawn under hygienic conditions and protected from contamination in transport from the source to the consumer. Mr. T. B. Macaulay has proved that this can be done on a small scale; at his experimental farm near Montreal, Canada, there is a herd of Friesian cattle; each animal is tuberculin-tested at regular intervals, and for the seventh year in succession the tests have been negative; procedures are adopted for ensuring the purity of the milk, these having proved successful in reducing the bacterial content considerably. The Federal Government of Canada offered free tuberculin-testing to live stock owners in 1897, and plans for eradicating tuberculosis in cattle have been evolved as the result of experience during the succeeding years. It is estimated that the average proportion of tubercle in cattle is less than 5 per cent. at the present time.

The incidence of tuberculosis in cattle in England is estimated at a much higher figure and there is evidence of a large amount of infection in pooled raw market milk. Dr. R. Marguerite Price, bacteriologist to Toronto University, in her studies on "Bovine Tuberculosis and its Relation to Infection in Children" in the Toronto area, has come to the conclusion that pasteurisation of, or boiling, milk prevents bovine tuberculosis in children, and Dr. Harold Parsons produces clinical evidence in support of this conclusion. Statistical evidence in favour of pasteurisation has been produced by Dr. Shirley Wynne, commissioner of health for New York, and the health officers of other large American cities. The question therefore arises, in view of the large amount of bovine infection in this country, should pasteurisation be adopted generally?

In Canada and U.S.A. the generally accepted opinion appears to be that pasteurisation does not materially impair the nutritional properties of the milk. There is evidence, however, that heating milk reduces the amount of vitamin D and available calcium; it also destroys certain organisms which may aid digestion in infancy. As milk is an essential article of diet in infants and young children and as there is a possibility of pasteurisation impairing the nutritional qualities, would it not be safer to give Certified or Grade A (T.T.) milk to infants and young children and reserve pasteurised milk for older children and adults?

Should not pasteurisation of milk even for these individuals be regarded as a temporary expedient only and efforts be directed towards obtaining a general supply of milk free from pathogenic organisms with its nutritional qualities unimpaired?

I am, Sir, yours faithfully,

HAROLD VALLOW,
Tuberculosis Officer, City of Bradford
Jan. 22nd, 1931. Anti-tuberculosis Centre.

MYOMECTOMY.

To the Editor of THE LANCET.

SIR,—I read with much pleasure the leading article in your last week's issue commenting upon my Hunterian Lecture, and beg to answer the pertinent questions.

Of the 30 women who conceived after myomectomy the tumours removed were single in 13 cases and multiple in 17 cases. The numbers of the fibroids removed from the members of the last group were respectively: 32, 29, 21, 14, 14, 11, 10, 9, 8, 7, 7, 5, 5, 5, 4, 3, and 3. I cannot with exactitude give the positions occupied by the tumours as I have no records, but the vast bulk of them were interstitial. Neither can I say how often the uterine cavity was opened, as I do it so commonly. It certainly was opened in all the cases in which the number of fibroids removed was considerable. As regards the "hood" operation. The uterus when refashioned in this way more nearly approximates to the appearance of the normal organ than by any other method. All patients on whom I have performed it have d well, and two of them are amongst the group subsequently bore children. The labours in bo cases were natural.

My thesis was not that myomectomy shou supersede hysterectomy in the treatment of fibroids but rather that it should be the "operation of inclina-tion" in all cases, and the operation of choice i a considerable number.

I am, Sir, yours faithfully,

Devonshire-place, W., Jan. 27th. VICTOR BONNEY.

LEAKAGE FROM OXYGEN CYLINDERS.

To the Editor of THE LANCET.

SIR,—I agree with Dr. Roffey that oxygen cylinde should be tested before issue by chemists, and believe this is commonly done either by testi weight or pressure. I find a more common is that oxygen is lost by leakage in the patient house; the valves at present in use are ofte stiff that it is almost impossible to turn them completely between administrations, unless happens to be a strong male relative avail. Also when turned on, it is sometimes difficult prevent a sudden rush of oxygen, the noise of w most disturbing to a seriously ill patient. It s not be difficult to devise a valve that could be operated. Of course the change over to e acting valves would involve expense to the ma but it would be a boon to patients and those who called upon to use the apparatus.

I am, Sir, yours faithfully,

Tunbridge Wells, Jan. 25th, 1931. R. D. AYLWARD

MOTIVES AND MECHANISMS OF THE M

To the Editor of THE LANCET.

SIR,—If I understand Dr. A. T. Todd's correctly we are to abandon modern psychop because it is libidinous and ridiculous. Appar the fact that it may contain the elements of tr of no consequence. If Truth be unpleasant apparently ludicrous it must be suppressed at all.

All great discoveries arouse both abuse and ridi. The lay public rocked with delight at the idea evolution. The bacterial theory of disease regarded as disgusting.

Because patients are given explanations

requently cure them) instead of bottles of medicine which do not) it is foolish to say that they are not eing treated.

But it seems a great shame that more and more linics for the treatment of early mental disease are pringing up—Dr. Todd could save all this expense ith kaolin, acids and (Ye gods!) raw cabbage.

I am, Sir, yours faithfully,

London, Jan. 27th, 1931. CLIFFORD E. ALLEN.

THE PROBLEM OF REJUVENATION.

To the Editor of THE LANCET.

SIR,—Under this title Dr. Lorand gave an address o the Hunterian Society, an abstract of which appears your columns to-day. His address was a résumé f his experiences at Carlsbad, and its practical lesson as that old age could be considered as a condition f general auto-intoxication, so that the logical way f rejuvenation would lie through dietetic methods —that is, through the stomach and the intestines. In speaking of the consequences of intestinal auto-intoxication he recommended the regular and thorough cleansing of the bowels, saying that one of the best methods was the "entero-cleaner bath." His words, which are quoted in your columns, are not as clear as they might be, and it is my recollection that he added that an apparatus known as the gymnacolon was equally good. I should be glad to know exactly what Dr. Lorand meant by an "entero-cleaner bath." Does the word "bath" refer to a bathing of the intestines or the body. The apparatus he mentioned, the gymnacolon, is for continuous colonic irrigation, the patient lying on a specially constructed chair. Is he referring generally to colonic lavage by an entero-cleaner bath, or is he advocating the repellent technique by which a patient is irrigated while he is lying in a bath? This latter procedure is, in my opinion, most unhygienic, owing to the fact that it is impossible to boil the apparatus between cases, and that there is always a certain amount of leakage into the bath.

I am, Sir, yours faithfully,

Jan. 24th, 1931. V. R.

PUBLIC HEALTH SERVICES

EPORTS OF MEDICAL OFFICERS OF HEALTH.

A Survey of 1929.

DURING the last ten months we have commented n upwards of 100 reports, and it may be of interest summarise the impressions left by their perusal. he year 1929 will be remembered as the worst nfluenza year since 1918. It was also extraordinary s regards weather conditions. Ushered in by fog here was record-breaking cold weather in the first wo months, to be followed by a prolonged drought, nd finally in the last months of the year by a very eavy rainfall with floodings. The rainfall for the hole year was deficient and the hours of bright unshine were above the average. It was, therefore, year of meteorological extremes. It was also a otable year, as preparatory to the great changes nder the Local Government Act, 1929, which came nto force on April 1st, 1930. The various authorities ere preparing their schemes and arranging to put e poor-law institutions to better use. In many ses hospitals were transferred in anticipation. ounty councils were specially considering the organisation of isolation hospitals, while county stricts were looking forward to financial help for ater-supply and sewerage schemes. In the towns forts were being made to secure better coöperation tween the various departments of the public alth service. The effort to avoid overlapping sults in making the work more interesting for the aff. Thus the tendency is to have assistant medical ficers interchangeable between the departments, d nurses who carry out health visitation for all blic health purposes.

GENERAL SANITATION.

Housing.—In a few districts housing shortage was id to be almost overtaken but in many it was still ute. Houses at lower rentals are in demand erywhere, and the reported overcrowding of unicipal houses by sub-letting is one indication. few districts are trying to meet the demand for eaper houses. Portsmouth has adumbrated a heme for slum clearance and the rehousing of the um tenants in municipal houses with abatement the rental in respect of children. Slum clearance s not been attempted except on a small scale. veral reports refer to the need for providing unicipal houses for overcrowded families, undesirble tenants, and families infected with tuberculosis. the metropolitan area the county council estates too far off to benefit the poorer classes in the boroughs who have to live near their work. The L.C.C. allocate half their houses to the borough councils and they make the useful stipulation that every effort should be made to prevent the vacated houses becoming again overcrowded. In some districts—e.g., Kensington—Section 3 of the Housing Act, 1925, which enables the authority to renovate the house in the default of the owner has been found very useful, but in most districts this section was little used. Many county medical officers of health, especially in Scotland, are very enthusiastic about the Housing (Rural Workers) Act, 1926, but on the whole the advantage taken of this Act has been disappointing. There are signs, however, that the new Housing Act of 1930 will be taken in hand more seriously than its predecessors by the local authorities which have to administer it.

As regard *refuse*, experiments have been made in some districts with dustless removal plants. There have been many complaints with regard to the management of tips and the system of controlled tipping has improved matters somewhat.

The prevention of *rivers pollution* is arousing more interest and the establishment of rivers boards meets with more favour. There is more activity with regard to sewage disposal schemes, and efforts are being made by the trades concerned to deal with the nuisances caused by trade wastes. On the other hand, the development of scattered building estates adds to the difficulties of authorities, which have to deal with rivers pollution.

No special progress has been made with *smoke abatement*. Regional committees with statutory powers are difficult to organise owing to local jealousies. Domestic smoke is now definitely recognised as the worst offender in causing atmospheric pollution. Several health authorities have followed the example of Salford in using only smokeless fuel in their offices. Unfortunately very little smokeless fuel is available as yet for would-be consumers.

MILK-SUPPLY.

The misleading nomenclature of graded milks continues to give rise to criticism. There was no evidence of any improvement in England in the percentage of tuberculous milks as the result of recent legislation, but such veterinary inspection as has been inaugurated has not had time to have an effect, and without routine inspection there is little likelihood of early notification of infectious cases by the farmers. The Scottish counties have been more active in providing veterinary inspection, but as a rule it has not been possible to make the inspection at sufficiently short intervals. It is found, however, that veterinary inspection not only improves the sanitary condition of the dairy farms, but leads to economic feeding and milk recording. Several English county medical officers of health advocate more sampling of milk for tubercle by the districts, with a view to the earlier detection of animals giving tuberculous milk. It cannot be said that the follow-up by the county authorities of tuberculous milk reported by outside authorities leads to satisfactory results as the offending cow is only discovered in a small percentage of cases.

INFECTIOUS DISEASES.

The *influenza* epidemic coincided in most places with the severe weather of February. Districts attacked towards the end of February came off better owing to the improved weather in March. The birth-rate was lower than ever and the increased deaths caused by influenza and respiratory diseases resulted in many districts in an excess of deaths over births for the year.

The opinion seems to be growing that there is too much hospitalisation of *scarlet fever*, and that this disease, especially with antitoxin as an adjuvant, might very well be treated at home, thus setting free beds for more serious diseases, such as pneumonia. The duration of the stay of scarlet fever cases in hospital has been much reduced and the use of antitoxin is becoming general.

Diphtheria in most of the districts had a higher case-fatality than in the previous year, and the complaint is widespread that antitoxin in adequate doses is not given early enough. In some isolation hospitals the intravenous administration of antitoxin in very large doses has been efficacious in saving cases admitted in an apparently hopeless condition.

It is becoming customary to immunise scarlet fever cases admitted to hospital against diphtheria and vice versa. Immunisation schemes against diphtheria are not growing rapidly, and a county medical officer suggests that general practitioners should be in a position to offer immunisation to those who desire it.

Most of the cases of *typhoid fever* notified had an untraceable origin whilst a certain proportion were attributed to carriers. The varieties of typhoid nowadays seem to have no preference for the autumn but occur at any time of the year.

Serum for the prevention of *measles* has not come into general use. At the Birmingham City Hospital, when the supply of serum from convalescents had run short, serum from young probationers, who could give a clear history of an attack of measles in childhood, proved a quite satisfactory substitute.

The deaths from *encephalitis* frequently exceeded the notifications owing to the inclusion of the deaths of those who contracted the disease in previous years, when the disease was more prevalent. The provision of institutional accommodation for post-encephalitics is in statu quo, pending the allocation of the ex-poor-law buildings.

SPECIAL SCHEMES.

Maternity and Child Welfare.—Many specially planned centres were opened, sometimes combined with maternity and baby hospitals, and sometimes accommodating all the various clinics. The need for the appointment of obstetricians for antenatal clinics is being better realised, and in some cases consultants have been appointed not only for puerperal fever and pyrexia, but for difficult labours. It is found that the appointment of consultants and the provision of maternity beds leads to more effective notification of puerperal fever.

In the counties the covering of the whole area with a nursing and midwifery service proceeds, but in some cases slowly. Many *orthopædic* schemes have been extended during the year.

A general lack of institutional accommodation for *mental defectives* is reported.

Some of the oil companies are taking an interest in *cancer* research work in Manchester. The experience of Leicester and Willesden appears to indicate that early diagnosis and early operation are more likely to be secured through the persuasive efforts of a municipal centre than by the establishment of an early diagnosis clinic at a general hospital.

Cardiff has been added to the districts which have a hospital and special clinic for the supervision and treatment of early *rheumatic* manifestations in children.

Improved facilities have been provided for the *venereal disease* clinics in several districts. The percentage of default varies much as between one scheme and another (e.g., Edinburgh and Glasgow). The attempt to follow up defaulters has brought out the fact that in a large percentage of cases a wrong address is given. Good results are reported by Portsmouth from the treatment and following-up of congenital cases.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDI

JAN. 17TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 187 (last week 228); scarlet fever, 1768; diphtheria, 1327; enteric fever, 23; pneumonia, 1726; puerperal fever, 70; puerperal pyrexia, 117; cerebro-spinal fever, 29; acute poliomyelitis, 2; acute polio-encephalitis, 2; encephalitis lethargica, 20; dysentery, 15; ophthalmia neonatorum, 81. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 20th–21st was as follows: Small-pox, 225 under treatment, 8 under observation (last week 215 and 3 respectively); scarlet fever, 1585; diphtheria, 1918; enteric fever, 10; measles, 89; whooping-cough, 171; puerperal fever, 30 (plus 12 babies); encephalitis lethargica, 121; poliomyelitis, 1; "other diseases," 91.[1] At St. Margaret's Hospital there were 19 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 94 (0) from measles, 9 (5) from scarlet fever, 33 (4) from whooping-cough, 39 (8) from diphtheria, 60 (10) from diarrhœa and enteritis under two years, and 146 (27) from influenza. The figures in parentheses are those for London itself.

Thirty-five fatal cases of measles were reported from Liverpool, 10 from Bristol, 8 from Hull, 6 from Nottingham, 5 from Birmingham, and 4 each from Birkenhead, Gateshead, and Newcastle-on-Tyne. Leeds and South Shields each recorded 3 deaths from whooping-cough. Diphtheria claimed 5 victims at Liverpool and 3 at Salford. Diarrhœa was credited with 12 deaths at Liverpool, 7 at Birmingham. The 119 fatal cases of influenza outside London are scattered over 52 great towns; 27 were reported from Liverpool, 7 from Birmingham, and 5 each from Bolton, Manchester, and South Shields.

The number of stillbirths notified during the week was 282 (corresponding to a rate of 42 per 1000 births), including 50 in London.

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[1] The unusual size of this figure is due to the fact that patients suffering from certain infectious diseases, not admissible under the Public Health London Act, 1891, and which have hitherto been received into the general hospitals of the Council (the former poor-law infirmaries), are now, as a matter of convenience, admitted to the infectious diseases hospitals, as both these classes of hospitals are now administered by the London County Council under the provisions of the Local Government Act, 1929.

SUN BALCONIES AT COSSHAM HOSPITAL.—The Cossham ladies needlework guild has presented to this memorial hospital at Kingswood, Bristol, a series of sun balconies which were opened last week by the Sheriff of Bristol, Mr. H. G. Tanner. The collecting of the cost, £680, occupied the guild for ten years.

OBITUARY

HARRY DE RIEMER MORGAN, M.A. Oxf., M.R.C.S. Eng., D.P.H.

Dr. Morgan, whose death occurred at Aldenham, where he had been living in retirement for the last 20 years, was at one time a member of the council of the Lister Institute, and a keen worker in preventive medicine. After graduating at Oxford in 1887 he took his medical course at St. George's Hospital, qualifying in 1892, and made some voyages on Union line steamships before settling at Cockington, Devon, where he became medical officer of health. Taking the D.P.H. in 1901, he began his work at the Lister Institute, partly in coöperation with Mr. J. E. Barnard, partly with Prof. J. C. G. Ledingham. One of his first studies, published in our own columns, dealt with the presence of bacteria in the organs of healthy animals.

Prof. Ledingham writes: "Morgan's bacillus may possibly be the only link between the younger generation of bacteriologists and the H. de R. Morgan whose death took place at Aldenham on Jan. 15th, but to many of his old associates at the Lister Institute the news of his decease will awaken the kindliest of memories, for to them and his familiars in pre-war days he was known as 'Jimmy' Morgan. During the ten years preceding the war Morgan was a well-known and much esteemed figure in the bacteriological laboratories of the Institute. Except for a tenure of the Ernest Hart memorial scholarship, during which he carried out his investigations on the bacteriology of summer diarrhœa, Morgan was a voluntary worker, but he took his work very seriously and was most conscientious in its performance. Having been actively interested in public health before circumstances made it possible for him to settle down to laboratory work, Morgan applied himself to practical problems. He carried out in 1904 and 1905 investigations on the bacterial content of the tissues of healthy animals, and on the organisms associated with food poisoning so far as the differential criteria applicable at the time permitted. He was particularly concerned with the distribution of the group in the various domestic and laboratory animals. These earlier studies were the prelude to an intensive four years' study (1905–08) of the bacteriology of summer diarrhœa, in the course of which he drew attention to the importance as a possible ætiological agent of the organism first described by him as *Bacillus No. 1*, and which is now known as Morgan's bacillus or in American literature *B. morgani*.

"Morgan himself was extremely cautious in ascribing ætiological importance to his bacillus. Even now there is no conclusive evidence that this organism is ætiologically related to the condition with which it was first associated, or indeed to any specific human disease, but in saying so it has to be admitted that our knowledge of the pathogenesis of many acute intestinal disturbances remains very fragmentary when we exclude from consideration the much studied salmonella and dysentery groups. One hears little of summer diarrhœa now. Explosive outbreaks of toxic diarrhœa would appear in these days to be frequently due to some member of the dysentery group, and particularly the Sonne type. At the period of Morgan's study of summer diarrhœa he took particular pains to search for true dysentery strains in view of American experience, but failed to secure evidence that these came into the picture.

"Though the ætiological importance of Morgan's bacillus remains equivocal, it takes a secure place in systematic bacteriological literature. The last important work by Morgan was his study of various dysentery-like organisms recovered from English sources, mainly typhoid convalescents and suspected typhoid carriers. A certain proportion of these casual strains qualified for admission to the mannite-fermenting dysentery group, and it was inferred that genuine dysenteric infections were probably more common in this country than was then believed. This conclusion was reached before the war, which itself undoubtedly contributed materially to the wider distribution of dysenteric infection in post-war times."

FREDERICK MEADOWS TURNER, M.D. Camb., D.P.H.

Dr. F. M. Turner, who was for 34 years medical superintendent of the South-Eastern Fever Hospital, New Cross, died on Jan. 17th at the age of 64 years. Born at Norwich in 1866, son of the Rev. F. Storrs Turner, he went to the City of London School and took the B.Sc. Lond. before going up to Trinity College, Cambridge, with a scholarship. He graduated in medicine in 1892, continuing as house physician at Guy's Hospital, where he had done his clinical work, and studying also at Heidelberg. In the next year he entered the service of the Metropolitan Asylums Board as assistant to the late Dr. R. A. Birdwood at the North-Eastern Hospital. Promotion came quickly and four years later he was appointed superintendent of the South-Eastern Hospital, a post which, excepting for a brief interval when the hospital was rebuilding, he kept until the time of his death. With first-rate mental equipment he soon became a leading authority on infectious diseases, especially on the statistical side, and his report of 1906 on return cases of scarlet fever has become a classic. About the same time he contributed to *Biometrika* a paper on the correlation between vaccination and small-pox in the London epidemic of 1901–02. It was Turner who showed, in 1922, the rise in mean age of scarlet fever at times of epidemic prevalence. But his scientific interests were not confined to medicine. He studied biology in all its branches, working with Prof. A. E. Boycott on various biological problems, one of these being the inheritance of sinistrality in the snail, communicated to the Royal Society. Dr. J. B. Byles, to whom we are indebted for many of these biographical details, writes:

"Turner was an indefatigable worker devoted to his patients, his staff, and his hospital. He ruled by kindness and was beloved accordingly. His mild reproof was as efficacious as another's anger. He spared no trouble or inconvenience to give help or advice to any who needed it, and his colleagues in the service valued his sound judgment and considered counsel. Turner lived most of his life in the heart of London, but he knew and loved the country and was a delightful companion on a ramble. One of his favourite recreations was sailing, and for years he might be seen dodging the heavy traffic on the swift tides of the lower Thames, even in dirty weather. Some years ago, while sailing on the Norfolk Broads, he suffered a perforation of a duodenal ulcer for which he underwent operation five hours later at the Norfolk and Norwich Hospital. With similar courage he submitted to the severe operation which

(*Continued at foot of next page.*)

at present in a position to answer definitely the questions of the hon. and gallant Member, but I am informed that two of the borough councils have entered into fresh contracts for the tipping of refuse on a new site under improved conditions.

Deaths from Tuberculosis.

Lieut.-Colonel **Fremantle** asked the Minister of Health the number of new cases of and the number of deaths from pulmonary and non-pulmonary tuberculosis notified in 1915, 1920, 1925, and 1929, respectively, and the estimated percentage of such cases attributable to infection of bovine origin.—Mr. **Greenwood** replied: The numbers asked for are shown in the following table:—

ENGLAND AND WALES.

Year.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.	
	New cases notified.	Deaths.	New cases notified.	Deaths.
1915	68,309	40,803	22,283	13,492
1920	57,844	32,791	15,488	9,754
1925*	60,770	32,382	20,667	8,005
1929*	57,274	31,425	18,682	6,565

* For the years 1925 and 1929 the figures include all new cases coming to the notice of medical officers of health, whether as a result of notification under the Public Health (Tuberculosis) Regulations or otherwise.

I am advised that there is no information available on which to base any reliable estimate of the numbers of these cases or deaths which were due to infection of bovine origin.

FRIDAY, JAN. 23RD.

The Case of Mrs. Olive Wise.

Mr. **McEntee** asked the Home Secretary whether he would consider arranging for the removal of Mrs. Olive Wise, of Walthamstow, from Holloway gaol to some private maternity home during the period of her confinement; whether he would give further sympathetic consideration to her case, with a view to her early release from prison; whether he would give consideration to the present state of the law, with a view to its modification, so that in future any female prisoner who was convicted of murder should not be sentenced to death if it was proved that she was pregnant; and if he would consider whether any amendment of the existing law was necessary to enable judges to assess the responsibility of the man in such cases and to ensure that where such responsibility was proved the woman would not be forced to bear all the punishment.—Mr. **Short** replied: As my hon. friend is aware, that sentence of death in this case has already, on the recommendation of my right hon. friend, been commuted to penal servitude and in due course my right hon. friend will consider very carefully whether, having regard to all the circumstances, he would be justified in recommending further clemency. He is advised that there is no power to order the removal of Mrs. Wise to a private maternity home during the period of her confinement. Proper provision is made in prison for the treatment of such prisoners and for their necessary care. With regard to the third part of the question, I would refer my hon. friend to the reply given yesterday. The last part of the question raises considerations of a far-reaching character with which it is impossible to deal within the limits of an answer to a question, and my right hon. friend will write to my hon. friend on the matter.

Production of Lymph from Rabbits.

Mr. **Freeman** asked the Minister of Health how many rabbits had been used in the preparation and production of vaccine lymph at the Government lymph establishment for each year since rabbits were first used for this purpose; and what was done with them after the experiments had been completed.—Mr. **Greenwood** replied: Between 100 and 200 rabbits are used annually for the purposes indicated in the question. The rabbits are killed as soon as these purposes have been fulfilled.

MONDAY, JAN. 26TH.

Kirkburton Mental Hospital.

Major **Cohen** asked the Minister of Pensions whether there was any possibility of the Kirkburton mental hospital being required by the West Riding authorities; and, if so, whether he would give an assurance that the pensioner patients at present in that hospital would not be returned to county mental institutions, but would be transferred to a Ministry institution where they would receive treatment exactly similar to that now being given at Kirkburton.—Mr. W. **Paling** (Lord of the Treasury), who replied, said: The answer to the first part of the question is in the affirmative. The policy of the Ministry as regards the type of case at present accommodated at Kirkburton remains unaltered and steps will be taken as occasion arises to make such similar arrangements as may be necessary for present and future patients who may be able to benefit by this form of treatment.

TUESDAY, JAN. 27TH.

The Washington Hours Convention.

Mr. **Graham White** asked the Prime Minister if it was the intention of the Government to proceed with the Bill to ratify the Washington Hours Convention. Mr. **Snowden** (Chancellor of the Exchequer) replied: The Government wish to proceed with the Hours of Industrial Employment Bill, but my right hon. friend cannot say when the further stages of the Bill will be taken.

New Factory Legislation.

Mr. **Charles Williams** asked the Prime Minister on what day he proposed to introduce legislation to amend the Factory Acts.—Mr. **Snowden** replied: My right hon. friend regrets that he cannot make any further statement on this subject.

Russian Timber and Public Health.

Sir **William Davison** asked the Minister of Health whether instructions had been, or would be, given to officials of the Ministry at the ports concerned to inspect all imports into this country of Russian timber, including doors ready to be placed in houses, produced under insanitary conditions, in order to avoid danger to the public health by reason of insects bred in such conditions being imported with the timber.—Miss **Lawrence** (Parliamentary Secretary to the Ministry of Health) replied: The answer is in the negative. My right hon. friend is advised that there is no reason to apprehend danger to the public health from the importation of this timber.

Cost of Poor-law Infirmaries.

Dr. **Hastings** asked the Minister of Health the approximate cost per year of maintenance and treatment of the sick and infirm in the poor-law infirmaries.—Mr. **Greenwood** replied: The cost of poor-law relief in poor-law infirmaries for which separate accounts are kept, in the year ended March 31st, 1929 (the latest year for which particulars are available), was £5,379,000 approximately.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. C. Keating to be Surg. Lt.-Comdr.

Surg. Comdrs. W. Bradbury to R.M. Infirmary, Deal; H. E. R. Stephens to R.N. Hospital, Chatham; and W. P. Beattie to *Carlisle* and to *Cardiff*.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Lt. R. St. J. Lyburn to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

D. P. F. Mulvany is granted a temp. commn. in the rank of Lt.

TERRITORIAL ARMY.

Capt. J. Marshall to be Maj.

MILITIA.

Maj. D. Macfadyen retires on attaining the age-limit and retains the rank of Maj.

INDIAN MEDICAL SERVICE.

Capt. J. Carrey to be Maj.

Lt. L. G. Backhurst to be Capt. (prov.).

The provisional appts. of the undermentioned officers are confirmed: To be Capts.: J. McM. Wilder, E. G. Hunt Wood, R. L. Frost, K. S. Fitch, and W. T. Taylor. To be Lts.: E. P. N. M. Early, W. McAdam, J. H. Gorman, S. M. Kharegat, D. H. Waldron, E. B. Eedle, and A. B. Guild.

Capt. M. D. Minhas relinquishes his temp. commn.

Extension of Harrow Hospital.—The [illegible] ments now in progress, which will cost £50,000, will increase the number of beds from 40 to 75. Particular attention is being given to devices for making the bui[illegible] sound-proof.

MEDICAL NEWS

University of Oxford.

On Jan. 22nd the following degrees were conferred :—

D.M.—P. N. B. Odgers and P. L. Gibson.

B.M.—B. T. Squires, R. T. V. Clarke, W. G. Rees, Rosalind V. erguson.

Dr. W. D. W. Brooks has been elected to a Fereday Fellowship t St. John's College.

University of Cambridge.

On Jan. 23rd the following degrees were conferred :—

M.B. and B.Chir.—Hermon Taylor, R. H. Dyer, B. C. hompson, and F. H. Ward.

M.B.—A. J. Smyth.

B.Chir.—C. J. K. Hamilton and H. D. B. Kelly.

ociety of Apothecaries of London.

At recent examinations the following candidates were ccessful :—

Surgery.—G. C. Brown, University of Cambridge and St. Mary's osp.; W. G. Kingston, Middlesex Hosp.; S. H. Thaler, *y's* Hosp.; and M. R. Tuteur Samuel, Universities of eiburg and Manchester.

Medicine.—A. J. P. Coetzee, London Hosp.; D. R. Rigg, niv. of Sheffield; and R. Schauder, King's Coll. Hosp.

Forensic Medicine, Hygiene, and Insanity.—A. J. P. Coetzee C. L. Ferguson, London Hosp.; W. R. Packenham, V. of Oxford and St. *Mary's Hosp.*; and D. R. Rigg, v. of Sheffield.

idwifery.—G. C. Brown, *Univ.* of Cambridge and St. Mary's osp.; and A. E. Mathews and A. W. Toussaint, St. Mary's osp.

he Baths of Dax.

The authorities of Dax, the thermal resort in the Pau-arritz district, where mud baths are a conspicuous feature, ve a dinner on Monday last, Jan. 26th, at the Savoy otel to a group of medical men at which the increasing nenities of their spa were fully detailed. The Dax ganisation—the Société Immobilière et Fermière des ux Thermales et Minérales—was represented by its incipal officers, while among others who supported Sir Clair Thomson in the chair was the French Consul-General London and many well-known doctors. The prosperity the spa was proposed in a bi-lingual speech from the air, as Sir StClair Thomson was returning thanks for the ests to their French hosts; after which Dr. Leonard illiams gave a short discourse, with cinema illustrations, the climate and waters of Dax and their therapeutic dications. Dr. Williams referred to the many patients o would benefit by sojourn in a spot so beautiful, so airy, d yet so sheltered as Dax, quite apart from their availing emselves of the elaborate arrangements made for universal ulticing in the soft alluvial mud of the Adour. The tty address was followed by an informal debate in which any of the company, hosts, and guests joined. The rangements for the dinner were made by the Federation the Health Resorts of France, from whom all information ncerning hotel accommodation and railway travelling n be obtained through Mme. Juppé-Blaise, at Tavistock ouse (North), London, W.C.

yal Society of Medicine.

At a conversazione held at the house of the Society on ednesday evening, Jan. 21st, Dr. Arnold Chaplin spoke extempore piece, fully illustrated on the screen, in which threw pleasant lights on the characters of a group of storic persons, concerning whose failings the world has ade up its mind. Most of them were really great and arly all occupied in their day, for different reasons, a ghly important place in the eyes of their contemporaries. arting with Theodora, Justinian's famous empress, the turer begged indulgence for her crimes on the score of r supreme courage. For Catherine the Great he made an ology, perhaps of a cynical sort but none the less telling; excused her sexual vagaries on three grounds—namely, at her husband was a sot, that she pensioned off her vers liberally, and that she introduced contemporary, pecially French, literature into the Russian Court. The tength of Cromwell's character, and his astonishing titude as a general, displayed when a middle-aged amateur, re held by Dr. Chaplin to condone the Protector's faults; d Voltaire's genius, wit, and surpassing literary accomplishments were set out as more than compensating for any xity of morals according to strict standards. To Madame oland he accorded a moving tribute, and the Young etender he dismissed with contumely, adding a pictorial iticism of the "bonnie" Prince by showing his portrait middle age. Running comments upon the Marquise du âtelet, Voltaire's intimate, and the translator of Newton's incipia; upon William III., who defied the Catholic and l-powerful Louis XIV. as a leader in the Grand Alliance; and upon Georgina Duchess of Devonshire, who bought votes by her kisses from the electors of Westminster, completed a piquant address which closed with the question addressed to the audience—"Now, would you rather be weak and good or strong and bad?"

At the conclusion Sir StClair Thomson moved the thanks of the meeting to Dr. Chaplin for what he described as a "debunking" oration, the American adjective, as he explained, signifying the removal of bunk from a subject. Lord Dawson, deputising as President of the society for Dr. Watts Eden, said that the applause of the audience rendered it unnecessary to take a formal vote from the large attendance.

University of London.

University College.—Five lectures on The Modern Technique of Cytology are being given at the College by Prof. R. Chambers (New York), Dr. R. G. Canti, and Dr. R. J. Ludford, at 5 P.M. on Fridays, Jan. 30th and Feb. 6th, and Thursdays, Feb. 12th, 19th, and 26th.

University of Leeds.

Dr. A. St. G Huggett has been appointed to the newly instituted Readership in Pharmacology within the Department of Physiology.

University of Manchester.

Dr. H. S. Raper, F.R.S., Brackenbury professor of physiology, has been appointed a Pro-Vice-Chancellor.

Royal College of Physicians of Edinburgh.

The Morison lectures will be given at the College by Dr. D. K. Henderson at 5 P.M., on Feb. 9th, 11th, and 13th. His subject will be Social Psychiatry.

British Institute of Philosophical Studies.

Prof. J. S. Haldane, F.R.S., will preside at a meeting to be held at University College, Gower-street, W.C., at 8.15 P.M. on Tuesday, Feb. 3rd, when Sir J. Arthur Thomson will lecture on Purpose in Evolution.

Wellcome Museum of Medical Science.

This museum is being rebuilt and will remain closed until further notice.

Glasgow Students' Collection.

The sum of £15,000 was realised by the Students Charities' Day collection. This was £2300 less than the record total of last year. Since 1921 Glasgow students by these efforts have raised £119,630.

Harry Stewart Hutchison Prize.

The University of Glasgow announce that this prize, of the value of about £50, for the best writing or writings embodying original research work in a branch of medical science relating to children will be awarded this year. Medical graduates (of not more than ten years' standing) of all British, home and colonial universities may be competitors. Compositions must be submitted in proper form to the Clerk of the Senate before March 31st, 1931.

Fires in Hospitals.

On Wednesday last week a fire occurred in the machinery room attached to the X ray department of the new Margate General Hospital which was opened in July last. The whole X ray machinery equipment was destroyed and the basement completely burned out, but no injury was done to the building above. The replacement of the installation will cost from £1500 to £2000.—A few days earlier a fire broke out in the diphtheria ward of the White Hoe Infectious Diseases Hospital, near Douglas, Isle of Man. There were ten patients in the ward, and the hospital was nearly full, most of the patients being children. The fire was quickly extinguished and there was no personal injury.

Hospitals as Panel Chemists.

The Eccles and Patricroft Hospital was recently incorporated with the object of obtaining power, under the Health Insurance Act, to recover expenses incurred in providing drugs, food, and bandages for panel patients. This can only be accomplished by a hospital which has been appointed panel chemists, and an unincorporated hospital is not qualified for such an appointment. Acting on counsel's opinion, the Lancashire County Insurance Committee has now declined to accede to the hospital's request to be registered as a body entitled to receive such payments. The refusal is, however, understood to be based upon a technical flaw in the hospital's Articles of Association, and when the flaw has been rectified another application is to be made in the interests of the voluntary hospitals generally.

A Haig Maternity Home.

A maternity home as a memorial to the late Lord Haig has recently been opened by Lady Haig at Hawick, in Roxburghshire. The home, which has cost £2000, has been given by Mr. Norman W. Grieve, a native of the district.

A Broadcast Appeal.

On a recent Sunday Sir Ernest Wild, Recorder of London, broadcast an appeal on behalf of St. Peter's Hospital for Stone in Henrietta-street, Covent Garden. Within a few days the hospital received 6600 letters containing a total of £1445.

Donations and Bequests.

Among other bequests, the late Mr. Henry Lewis Doulton, of Putney Heath, and Ewhurst, Surrey, left £1500 to St. Thomas's Hospital; £1000 to the Royal Hospital for Incurables; £500 each to the Royal Hospital for Children and Women, Waterloo-road, and the Cancer Hospital, Brompton; and £100 to the Brompton Hospital for Consumption.—The trustees of the late Lady Cargill's estate have allocated £4000 to the Glasgow Royal Hospital for Sick Children, country branch; £3000 to the Glasgow Dental Hospital; £2000 to the East Park Home for Infirm Children; £1000 to the Glasgow Benevolent Society for the Relief of the Destitute Sick; £1000 to the Glasgow Royal Cancer Hospital; £500 to the Samaritan Society, Western Infirmary, Glasgow; and £500 to the Hospital for Sick Children, Glasgow.

Society of Apothecaries of London: Livery Dinner.

The Master of the Society of Apothecaries, Lt.-Col. C. T. Samman, presided on Tuesday last, Jan. 27th, over a Livery Dinner of the Society, the principal guests being the Lord Mayor of London, Sir William Phené Neal, and the Sheriffs. There was a large company present and the guests included many well-known persons.

After the loyal toasts the Master proposed the Lord Mayor and Sheriffs and the Corporation, adding that the toast did not require a syllable from him to commend it to the company. It was, he said, the first time for four years that the Lord Mayor had attended one of the Livery Dinners. The Lord Mayor, in his response, claimed for his office and for the government of the City of London a history of wise progress, so much so, that he, for his part, would hesitate to welcome any innovations without consulting the actions of his predecessors. Mr. Alderman and Sheriff Jenks, who also replied, confessed to not having realised previously the status of the Society as one of the qualifying medical bodies, an important position on which he offered his congratulations.

The presentation of the honorary diploma of the Society to Sir John Lynn Thomas, which followed, led to a description from the new licentiate of his professional career. Having declined the opportunity to succeed to his father's farm, and having, as he thought, a bent towards surgery, he served his time, in the old way, as an apprentice before starting to "walk the wards" of the London Hospital; and of his experiences at the outset he drew a vivid picture.

Prof. W. E. Dixon presented Mr. H. S. Wellcome, LL.D., to the Master as a recipient of the honorary freedom of the Society. He dwelt on Dr. Wellcome's patriotic actions at the outset of the war, when he placed the bureaux and laboratories of his firm at the disposal of the Government, organising also motor ambulances and flying hospitals. Dr. Wellcome was, said Prof. Dixon, a great medical and social benefactor. Dr. Wellcome, in reply, paid a tribute to the medical developments which marked the times, and which dated especially from the experiences gathered during the war. It was estimated, he said, that more lives were saved through the developments of medicine during the five years which followed the cessation of war, than had been lost during that struggle.

Dr. G. W. Cock then presented the Society with some pieces of early eighteenth century silver, in memory of the late Dr. George Wilks, a past master of the Society whose nieces, the Misses Lepard, were the donors.

The toast of the guests was proposed by Dr. Cecil Wall, Junior Warden of the Society, when Earl Russell replied.

INDEX TO "THE LANCET." VOL. II., 1930.

THE Index and Title-page to Vol. II., 1930, which was completed with the issue of Dec. 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Feb. 3rd.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Cases will be shown.

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Paper: Dr. Hubert J. Norman: Panel, Tuke, and Dacquin, and the Reform in the Treatment of the Insane. PSYCHIATRY: Members of this Section are cordially invited to attend. 8.30 P.M., SURGERY: PATHOLOGY. Special discussion on Indications for and the value of the Intravenous Use of Germicides. Openers: Mr. V. Zachary Cope and Mr. P. H. Mitchiner (Surgery); Dr. Alexander Fleming and Dr. T. H. C. Benians (Pathology). Other speakers will take part. THERAPEUTICS and MEDICINE: Members of these Sections are specially invited to attend and take part in the discussion.

THURSDAY.—8 P.M., TROPICAL DISEASES AND PARASITOLOGY: DISEASE IN CHILDREN. Special discussion on The Adaptation of European Women and Children to Tropical Climates. Openers: Dr. Aldo Castellani, K.C.M.G. (Hon.), and Dr. G. W. Bray (Tropical Diseases); Dr. A. R. Neligan and Dr. H. S. Sta (Disease in Children). Other speakers will take

FRIDAY.—10.30 A.M., OTOLOGY (Cases at 9.30 A.M.) Discussion: Tuberculosis of the Ear. Openers: Sir StClair Thomson and Mr. F. C. Ormerod. Cases and specimens will be shown by Mr. A. R. Tweedie, Mr. W. M. Mollison, Mr. H. A. Kisch, Mr. F. C. Ormerod, Sir James Dundas-Grant, and others. 4.30 P.M., LARYNGOLOGY (Cases at 3.30 P.M.). Members are asked to note the alteration in the time of this and future meetings. Discussion: Frontal Sinusitis and Its Treatment. Papers by Dr. J. S. Fraser and Dr. J. P. Stewart, Mr. Douglas Harmer and Mr. Bedford Russell, Mr. Walter Howarth. Illustrative cases and specimens will be shown by the above and by Mr. H. A. Kisch, Mr. V. E. Negus, Mr. Musgrave Woodman, and others. 8.30 P.M., ANÆSTHETICS. Paper: Mr. A. Dickson Wright: Spinal Analgesia, with Special Reference to Operations Above the Diaphragm.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY, Feb. 6th.—8.30 P.M, Discussion on Premature Senility, to be opened by Dr. H. H. Mills, followed by Dr. R. A. Young, Prof. F. G. Hobday, and Dr. Gordon Dewes.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.

WEDNESDAY, Feb. 4th.—3.25 P.M. (at the Alexandra Picture House, Camp-road, Leeds), Dr. Ronald Canti: Cinematograph Demonstration of Living Tissue Cells Growing in Vitro.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY, Feb. 2nd.—8 P.M., Prof. L. C. Martin, D.Sc.: Some Modern Developments in Microscopy (3).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Feb. 2nd.—5 P.M., Prof. H. H. Woollard: The Potency of the Pharyngeal Entoderm.

WEDNESDAY.—5 P.M., Mr. T. P. Dunhill: Malignant Disease of the Thyroid Gland—The Relation of its Incidence and Spread to its Embryology and Prognosis.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 2nd, to SATURDAY, Feb. 7th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Mon., 4 P.M., free lecture by Mr. Ernest Miles: Cancer of Colon and Rectum.—ST. MARK'S HOSPITAL, City-road, E.C. Thurs., 5 P.M., Free demonstration by Mr. E. T. C. Milligan: Diagnosis of Diseases of Rectum and Colon.—MAUDSLEY HOSPITAL, Denmark-hill, S.E. Fri., 2 P.M., free demonstration by Dr. J. Harris (Psychological Medicine).—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Fri., 4.30 P.M., lecture by Mr. Rodney Maingot: General Routine before Abdominal Operations. First of four lectures.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Special Course in Gynæcology. Mornings and afternoons.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham. Intensive Course. Second week. Further particulars from the Fellowship of Medicine.

KING'S COLLEGE, Strand, W.C.

MONDAY, Feb. 2nd.—5.30 P.M., Prof. J. Barcroft: Constancy of the Internal Environment (2).

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Feb. 5th.—9 P.M., Dr. Kinnier Wilson: Epilepsy: Its Variants and Their Treatment.

UNIVERSITY COLLEGE MEDICAL SCHOOL, University-street, W.C.

TUESDAY, Feb. 3rd.—5.15 P.M., Dr. W. Cramer: Filtrable Tumours.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Agar-street, W.C.

SUNDAY, Feb. 1st.—10.30 A.M., Mr. Eric A. Crook: Recent Advances in Surgery. 11.45 A.M., Dr. W. J. Adie: Early Diagnosis of Common Organic Nervous Diseases.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Public Health Division), Keppel-street, Gower-street, W.C.

MONDAY, Feb. 2nd.—5 P.M., Mr. J. C. Dawes: Public Cleansing. Composition and Storage of House and Trade Refuse.

WEDNESDAY.—5 P.M., Dr. W. G. Savage: Food Poisoning.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Feb. 2nd.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

NATIONAL HOSPITAL, Queen-square.

MONDAY, Feb. 2nd.—12 noon, Dr. Greenfield: Neuropathology. Diseases of the Nerve Cell. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Intracranial Complications of Otitis and Sinusitis.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Adie: The Treatment of Epilepsy.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Senile Tremor.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Exercises. (In Exercise Room.)

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Feb. 3rd.—5 P.M., Dr. S. E. Dore: Affections of the Hair and Hair Follicles.

THURSDAY.—5 P.M., Dr. A. M. H. Gray: Xanthoma. Herpes.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Feb. 6th.—4 P.M., Mr. H. Kisch: The Use of Radium in the Throat, Nose, and Ear.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Feb. 3rd.—3.15 P.M., Dr. C. C. Beatty: Lecture.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Feb. 4th.—4 P.M., Mr. V. Z. Cope: Demonstration of Surgical Cases:

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

THURSDAY, Feb. 5th—5 P.M., Mr. A. L. Walker: The Causes of Maternal Mortality.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

WEDNESDAY, Feb. 4th.—4 P.M., Dr. Rickwood Lane: Laboratory Investigation of Glycosuria.

Appointments

BOWER, MARGARET I., M.B., Ch.B. Edin., has been appointed Asst. Medical Officer for the Outer Isles of Inverness-shire.

HARVEY, W. C., M.D., Ch.B. Glasg., D.P.H., Medical Officer of Health and Superintendent of the Isolation Hospital, Southgate.

HORTON, R. LISTER, M.S. Lond., F.R.C.S. Eng., Honorary Surgeon to the Dorset County Hospital.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.: CAMBROOK, J. D., L.R.C.P. Lond., M.R.C.S., L.D.S., Honorary Dental Surgeon; JAMES, G. W. B., M.D., B.S. Lond., Honorary Psychiatrist; LEWIS, D., M.R.C.S., L.R.C.P. Lond., and SUNDERLAND, A., L.R.C.P. Lond., M.R.C.S., Hon. Anæsthetists.

Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Sen. and Jun. H.S.'s. At rate of £150 and £120 respectively.

Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.

Birmingham, City Babies Hospital, Canwell Hall.—Res. M.O. At rate of £100.

Birmingham, Erdington House Poor-law Institution, &c.—Res. M.O. £350.

Birmingham and Midland Eye Hospital.—Res. Surg. O. £110.

Birmingham City Education Committee.—Director of Child Guidance Clinic and Special Schools M.O. £600–£700.

Bolton, Townleys Hospital, Farnworth.—Asst. M.O. £225.

Bristol, City and County.—Asst. M.O. for Maternity and Child Welfare. £500.

Bristol City and County Mental Hospital.—Third Asst. M.O. £350.

Bristol Eye Hospital.—Res. H.S. £150.

Cancer Hospital, Fulham-road, S.W.—Physician.

Central London, Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Res. H.S. At rate of £75.

Charing Cross Hospital, W.C.—Asst. Obstetric Physician. Also Asst. Cas. O. and Res. House Anæsthetist. £100.

Chester Royal Infirmary.—H.S. to Ear, Nose, and Throat Dept. £150.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

Derby, Derbyshire Royal Infirmary.—Two H.S.'s to Special Depts. Also Ophth. H.S. Each £150.

Dudley, Guest Hospital.—Asst. H.S. £160.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Surgeon to Nose, Throat, and Ear Dept.

Gloucestershire Royal Infirmary and Eye Institution.—2nd H.S. At rate of £120.

Great Yarmouth General Hospital.—Jun. H.S. £150.

Hospital for Sick Children, Great Ormond-street, W.C.—Refraction Asst. for Ophthalmic Dept. 1 gn. each attendance.

Inverness Royal Northern Infirmary.—H.S. At rate of £100.

Lincoln City.—Chief Asst. M.O.H. £600.

Madras Medical College and Vizagapatam Medical College.—Professorship of Anatomy. Rs.1100 a month.

Maidstone, Institution for Mental Defectives, Leybourne Grange.—Res. Med. Supt. £700.

Manchester, Ancoats Hospital.—Res. M.O. £150. H.P. £100. Res. Surg. O. £200. Also Gen. H.S. £100.

Manchester, St. Mary's Hospitals.—Sen. Asst. M.O. for Children's Out-patient Dept. £100. Also Jun. Asst. M.O. £50.

Manchester, Royal Children's Hospital, Pendlebury.—Hon. Ophth. Surg.

Manchester Royal Infirmary.—H.S. for Central Branch, Roby-street. £100–£200.

Manchester Victoria Memorial Jewish Hospital, Cheetham.—Jun. H.S. At rate of £125.

Minehead and West Somerset Hospital, Minehead.—Res. H.S. At rate of £150.

Nelson Hospital, Merton, S.W.—Res. M.O. At rate of £100.

Nottingham and Midland Eye Infirmary.—Res. H.S. £200.

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.

Poole, Dorset, Cornelia and East Dorset Hospital.—H.S. At rate of £150.

Poplar Metropolitan Borough, Maternity and Child Welfare Clinics.—Part-time M.O. 1¼ gns. per session.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, Kensington, W.—Hon. Asst. Dental Surgeon.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Royal Northern Hospital, Holloway, N.—Asst. Surg. O. £75. Obstet. H.S. and H.S. Each at rate of £70. Also Hon. Surg.

St. Bartholomew's Hospital, E.C.—Surgeon.

Salisbury General Infirmary.—H.S. £150.

Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Res. Anæsthetist. £80–£100.

Sheffield Royal Infirmary.—H.S. At rate of £80.

Southport General Infirmary.—Sen. H.S. £200.

South Shields, Ingham Infirmary.—H.S. £150.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. £150.

Swindon and North Wilts Victoria Hospital, Swindon.—M.O. £125.

Surrey County Council.—Asst. M.O. £600.

Uxbridge, Hillingdon Hospital.—Dispenser. £250.

Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of the Chest.—Asst. Res. M.O. At rate of £300.

Virginia Water, Surrey, Holloway Sanatorium.—Jun. Asst. M.O. £350.

Wallasey, Victoria Central Hospital.—Jun. H.S. At rate of £100.

West Bromwich and District General Hospital.—Hon. Physician and Hon. Surgeon. Also H.S., H.P., and Cas. H.S. All at rate of £200.

West Ham County Borough.—Jun. Asst. M.O. £500.

Wigan Royal Infirmary.—Third H.S. At rate of £150.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Dingwall (Ross and Cromarty), Rowfant (Sussex), Parbold (Lancs.), and at Margate (Kent).

Births, Marriages, and Deaths

BIRTHS.

POTTINGER.—On Dec. 15th, at Invercargill, New Zealand, the wife of David Pottinger, M.D. Ed., M.R.C.P. Lond., of a son.

SELBY.—On Jan. 24th, the wife of Dr. H. J. Selby, of Newnham-on-Severn, of a son.

TOWNEND.—On Jan. 20th, at Welbeck-street, the wife of R. D. M. Townend, M.R.C.S., L.R.C.P., of High-street, W., of a son.

TUNNICLIFFE.—On Jan. 22nd, the wife of S. L. Tunnicliffe, M.B., Ch.B., B.D.S., M.R.C.S., L.R.C.P., of Granby-street, Loughborough, Leicestershire, of a daughter.

MARRIAGES.

BATEMAN—TURNER.—On Jan. 15th, at St. Margaret's, Westminster, Geoffrey Hirst Bateman, B.M., B.Ch., to Margaret, only daughter of Samuel Turner, J.P., High Sheriff of Lancashire, and Mrs. Turner, of Bamford, nr. Rochdale.

DEATHS.

AMSDEN.—On Jan. 18th, at Seaview-terrace, Rye, Sussex, George Amsden, M.B. Edin., late Medical Superintendent Essex County Mental Hospital, in his 85th year.

CÆSAR.—On Jan. 16th, at Clapton-in-Gordano, Somerset, Richard Thompson Cæsar, M.C., M.R.C.S. Eng., L.R.C.P. Lond.

MARSHALL.—On Jan. 24th, at Beverley, Chorley New-road, Bolton, John Dodds Marshall, D.S.O., M.C., Ch.B.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

"WHAT TO DO IF IT'S CATCHING."

UNDER this catching title Messrs. Newton Chambers and Co., Ltd., have published, at the modest price of 1s., a compilation, to which, we are informed, medical and sanitary specialists have contributed, and which places in the hands of the public the elementary rules for the domestic dealing with infectious diseases. So far as this is possible or useful, having regard alike to the need for brevity and the nature of the audience, the authors have given correct reasons for the advice which they offer, thus showing that the scientific coöperation claimed has been real. The technical staff of the firm working under such advice have, in fact, produced a small and cheap book, consultation of which by the public should clear up much of the perplexities which exist in the lay mind concerning the origin, prevalence, and prevention of infectious disease; as a result of the lessons here given the general population should be able to assist intelligently in the promotion of health under the advice of the medical profession. There is nothing novel whatever in the teaching, but the selection and arrangement of the material should make learning easy.

After an appeal to commercial prudence by pointing out the expense incurred through the spread of sickness, the first section of the book indicates how the doctor, and, where necessary, the sanitary authority, can play their parts in the maintenance of public health. The prudent note is made here that the seriousness of many common and general illnesses should not be estimated by the immediate effects, which, as far as mortality statistics go, may not appear to be sinister, but by their after-effects, which bulk largely in many special directions. The part played by specific germs, and the consequent necessity of preventing their spread, is set out succinctly, and there follows a synopsis of the more obvious signs of common complaints in their earliest stages, which bears the mark of well-informed care. This section closes with the assumption that the medical man has been called in, when the sound suggestion is added that he should be asked—Can this illness spread to other members of the household, and, if so, is removal to a hospital or complete isolation necessary, or can a modified form of semi-isolation in the home be employed? The chapter in which the plan for "semi-isolation" is put out is very interesting. The familiar rules for sick-room arrangements and disinfection are fully laid down; they insure that the sufferer should be kept as far as possible from contact with the family and that, when such contact takes place, certain precautions to prevent the spread of infection should be observed. The stricter regulations to be followed by all members of the household when the patient is in complete isolation summarises advice that the doctor usually gives in such circumstances, but the clear and emphatic language employed should be helpful in ensuring an orderly and inclusive attention to the many things that have to be thought of. The verbal instructions of the medical attendant will be recalled, and therefore followed with the aid of this categorical list. A tabular statement as to the accepted periods of incubation of the main group of infectious diseases is then followed by indications of the period during which quarantine and isolation should be enforced, while wise recommendations as to the treatment of the patient, after the medical declaration that he is well enough to leave the sick room, are added.

Other sections of the book deal with first-aid in the home, lay down precepts of personal hygiene, and give household hints of various sorts to those responsible for the domestic care of the sick. Attractive little pictures break up the text throughout, and will certainly act as aids to memory.

WOUNDS AND MAGGOTS.

SUPPLEMENTING the leading article on this subject in THE LANCET of Dec. 13th, 1930 (p. 1301), Dr. Hyman I. Goldstein (New Jersey, U.S.A.) writes: Dr. W. S. Baer, of Johns Hopkins Medical School, addressed the Interstate Post-graduate Assembly of North America at Detroit (Oct. 25th, 1929) on the subject of "Viable Antiseptic in Chronic Osteomyelitis." Baer had seen two wounded soldiers in France get well as the result of maggots filling the wounds. He "mulled the problem over in his head for ten years." and he then decided to try out this maggot treatment in some cases of chronic osteomyelitis, not cured by several operations and various chemical "sterilising" agents. All of the 21 cases both of compound fractures and ordinary chronic osteomyelitis of most bones of the human body, got well under the maggot treatment. He believes maggots kill off gas-bacillus infection. But Baer evidently was unaware of the use of maggots by Baron Larrey during the Napoleonic wars, and makes no reference to Larrey's *Clinical Surgery*, nor to Malgaigne or Packard. Maggots were being used in Madrid in August, 1929, when I visited the hospital there with the Spanish resident surgeon. Baer, while stating that maggots will kill the gas bacillus, does not mention tetanus spores. Sterile maggots, however, are now being grown.

REFERENCES.

Baer, W. S.: Proc. Interstate Postgrad. Med. Assoc. of North America, 1929, v., 370.

Larrey, D. J.: Clinique Chirurgicale, vol. i., pp. 51-[illegible] Paris, 1829.

Malgaigne, J. F.: Treatise on Fractures, vol. i., p. 271, Paris, 1847.

Packard, J. H.: Treatise on Fractures (Malgaigne), p. [illegible] Philadelphia, 1859.

THE MYSTERY OF LIFE.

A FILM now being shown at the Rialto Theatre in Coventry-street, London, opens with some fantastic pictures showing our own solar system separating from stellar matter. The evolution of animal life is then traced from amœba to primitive man through different types of aquatic and terrestrial animals. The call of sex is introduced with examples of mating, of selection of the fit, and of the urge to carry on the race. Human ontogeny from the conjugation of ovum and spermatozoön up to the birth of the fœtus is set out in rapid sequence. Here one cannot help feeling that the story is insufficiently clear and full. The film, in fact, just loses the opportunity of being great. If, while retaining its directness and simplicity, it were revised so as to present the story in a more logical sequence, it might well prove to be one of the real educational agents of our time. Prof. Julian Huxley's name is mentioned as its instigator, and we could have wished that his help had been secured in the production.

ENGAGEMENTS IN ADVANCE.

FROM the Lecture Agency, Ltd., the Outer Temple, Strand, London, W.C., we have received a copy of the Advance Date Book, which will be found useful by all who have to make a note of their engagements some time before their performance. Bound in leather and conveniently small, the diary is ruled so that the entries for a month appear on one page, with the facing page left blank for remarks. In this way the period from July, 1931, to June, 1932, is covered, while there are preliminary spaces for brief entries up to June, 1931. The diary is accompanied by calendars dealing with the three years following June, 1931, while the feasts and anniversaries are indicated for four years. There is space at the end of the diary for memoranda and accounts, and the price of the book is 3*s*. 6*d*. post free.

ADDRESSES AND ORIGINAL ARTICLES

USES OF DIATHERMY IN MEDICINE AND SURGERY.*

By E. P. CUMBERBATCH, M.B. OXF., M.R.C.P. LOND., D.M.R.E.,

EDICAL OFFICER IN CHARGE OF ELECTRICAL DEPARTMENT AND LECTURER ON MEDICAL ELECTRICITY, ST. BARTHOLOMEW'S HOSPITAL.

TREATMENT by diathermy has been practised in is country for a little more than 20 years; it may said that it "came of age" last year. Its growth as slow *during its first decade. During* its second n years, however, it grew rapidly, and to-day there scarcely a region of the body to which it has not en applied.

The present occasion is opportune for reviewing e subject. The Medical Society of London includes ny of the London authorities in the various nches of medicine and surgery. Some of them ilise diathermy in their specialties, and it will be teresting to hear their experience and opinions on use in medicine and surgery. I much appreciate e honour of the invitation to open a discussion on e subject. Since diathermy is now employed in most all the specialties, it is manifestly impossible r any one worker to acquire practical experience every branch of medical and surgical diathermy. have, however, seen diathermy "grow up," as it ere, in the *hospital* where it was *first* employed in is country for medical and surgical purposes, and uch of the early work on diathermo-therapy was nducted there. In opening this discussion I believe will be the best plan to speak on the different ecialties in turn, relating my own experience d then asking you for yours, as well as your mments and criticism. A few introductory marks, however, on the properties and uses of athermy in medicine and surgery may not be out place.

Medical diathermy is given for the following purposes: to relieve pain and spasm, to raise temperature ich is pathologically subnormal, to lower blood essure which is unduly high, and to aid the resolution inflammation. It is also given intentionally for e purpose of aiding the tissues to free themselves om local and general infection. Recently in the ited States the entire body has been subjected to athermy for the purpose of obtaining a so-called herapeutic fever." In surgery diathermy is used the purpose of coagulating abnormal tissue en asse. It should be mentioned that a current pable of producing diathermy can also be used to ll tissue by desiccating it—i.e., by depriving it of ter. This form of surgical treatment, known as *siccation* or *fulguration*, is of high value in the eatment of morbid tissue which does not extend eply below the surface. The post-operative reaction scarcely noticeable, and the scars are the best tainable. This form of treatment is little known the general medical profession. I can recommend in particular to the dermatologist. A current pable of producing diathermy can also be made to vide tissue and excise it like a knife, and, at the me time, seal the divided capillaries and lymphatics. should be mentioned that these two last-mentioned forms of treatment, strictly speaking, are not diathermy.

Treatment of Special Regions.

I shall now take the various specialties in turn and speak on the uses of diathermy in each one.

GYNÆCOLOGY.

It is in the treatment of certain diseases peculiar to women that medical diathermy has achieved the most striking success. *By means of a suitable method* the urethra and cervix can be safely and painlessly heated to a temperature of 114° F. or nearly a degree higher. The object of heating them to this high temperature is to aid them in freeing themselves from infection. This treatment is given twice weekly during one or two intermenstrual periods. Its effect *is to remove all clinical signs of inflammation.* If the infection is gonococcal the organisms disappear. The *Streptococcus hæmolyticus* also disappears. Diphtheroid and coliform bacilli, and non-pyogenic streptococci and staphylococci, if present in the cervical secretion, sometimes persist after diathermy even though all signs of cervicitis disappear.

The results above-mentioned were obtained in 90 per cent. of gonococcal cases, and in 80 per cent. of non-gonococcal cases. The patients were followed up for two years, and the results were found to be permanent. The cases in which the treatment failed include those in which relapse occurred at later stages after apparent cure. Failure occurred in those cases where there was widespread infection of the pelvic supporting tissues.

The most effective method of subjecting the urethra and cervix to diathermy and obtain the high temperatures named is that devised by Dr. C. A. Robinson. He elaborated it during the ten years when he was investigating the effects of diathermy in pelvic diseases in the electrical department of St. Bartholomew's Hospital. He found that it was necessary to introduce an active electrode into the channel of the urethra *or canal of the cervix.* Simpler methods, in which an electrode is placed in apposition with the cervix, were found to be unsatisfactory. Time does not allow a description of Dr. Robinson's technique. His method of heating the urethra and cervix to a temperature of 114° to 115° F. is very ingenious. It needs skill and practice in intrapelvic manipulation, but it is the *most efficient* method that has yet been devised.

I might digress here for a moment and say that temperature as high as those mentioned can only be obtained in regions which are close to the electrodes. I mention this fact because it is sometimes stated that *any degree* of heat can be obtained in *any part* of the body by means of diathermy. Down in the depths *of highly* vascular regions such as the thorax and abdomen I believe it impossible to procure more than a very slight rise of temperature—that is, when the electrodes are placed in contact with the skin. In the pelvis, however, one of the electrodes can be placed in close proximity to some of its organs, and these can be subjected to the maximum, or nearly the maximum, permissible degrees of diathermy.

The tubes and ovaries can be subjected to diathermy by using a special vaginal electrode. By reason of their deeper situation it is not possible to heat these parts to the same high temperature as the urethra or cervix. The relatively minor degree of therapeutic pyrexia that can be produced in the tubes is very often successful in bringing *salpingitis* to an end, both in gonococcal and non-gonococcal cases. In Dr. Robinson's experience the proportion of successful results reached 80 per cent. If pus is present in the tubes, however, surgical operation is necessary. If the pus is gonococcal it tends to become sterile of its own accord. Diathermy may then be applied to the infected cervix and afterwards to the tubes. In some cases this treatment seems to aid absorption of the sterile pus.

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* Opening a discussion at the Medical Society of London on n. 26th.

General pelvic diathermy is very successful in *dysmenorrhœa*, due to a minor degree of salpingitis. On the other hand, the treatment has no permanent effect in cases of dysmenorrhœa of the spasmodic type. Patients say they are much better during the period after the first course of diathermy, but if further courses are given they say that their improvement is not maintained. Ultimately they return to their original condition.

General pelvic diathermy seems to influence the endocrine functions of the ovaries. If cessation of menstruation is premature, this treatment will frequently cause its return even though it may have been absent for two, three, or even more years. In one case it returned after ten years' absence. Another fact which seems to indicate the influence of diathermy on the endocrine functions of the ovaries is the cessation of climacteric bleeding during the treatment and the alleviation of the symptoms which sometimes occur prior to the change of life.

The statements I have made on the effects of diathermy in diseases of women are based on the results obtained by Dr. Robinson during the ten years when he worked in my department in St. Bartholomew's Hospital. He has conducted similar work for a still longer time at the West Middlesex Hospital. He has acquired an enormous and unique experience; and I hope that he may be persuaded to publish it before long.

Before concluding my observations on diathermy in gynæcology I should like to call to your attention the work of Dr. Robinson in the treatment of *puerperal fever* by the same agent. By means of intrapelvic diathermy he succeeded in curing 33 out of 39 cases. This work is entirely original. As far as I am aware no other method has been so successful. The usual prophylactic precautions were taken, and diathermy was not applied in any of the cases before the fever had been in existence for seven days. Dr. Robinson has communicated his results to the Hunterian Society and to the Section of Electrotherapeutics of the Royal Society of Medicine.

DISEASES PECULIAR TO MEN.

I believe there are some specialists in men's diseases who utilise diathermy in the treatment of certain maladies of the prostate, epididymis, &c. I should like to hear the results they obtain. My own experience extending over 12 years, and derived mainly from cases which had resisted treatment elsewhere, leads me to conclude that results nearly as consistent as those obtained in infection of the uterus and its adnexa can be procured in certain infective diseases of the organs peculiar to men. The most successful results are found in cases of gonococcal infection. The best of all are obtained in gonococcal infection of the epididymis and other scrotal contents. The rapid alleviation of the pain and the subsidence of the swelling and disappearance of the tenderness can be regarded, I think, as one of the most constant phenomena of therapeutics.

Most of the cases of *gonococcal prostatitis* and *vesiculitis* which I have had under my care or observation have responded satisfactorily to diathermy. The treatment was applied by way of a rectal electrode. Cases in which the gonococci could not be made to disappear from the secretion under other forms of treatment were no longer found after diathermy. Some of these were afterwards subjected to a marriage test, and they passed it satisfactorily. The greatest difficulty is experienced in cases giving a history of gonorrhœa a long time ago and a persistent morning gleet. Gonococci have been searched for from time to time but never found. I have treated a number of cases of this kind by diathermy. In a few the pus cells disappeared and the gleet was not obser after the cessation of the treatment. More oft however, the pus cells could not be made to disappear, and the gleet persisted. Consequently no final conclusion can be made in regard to the absence presence of gonococci in the tissues before or diathermy.

In regard to *anterior urethritis* the action diathermy is disappointing. It does not bring the rapid abortion of the infection that occurs urethritis in the female is treated by the same I have treated a few cases by diathermy, but discharge came to an end no sooner than might been expected if other methods had been em In the methods which I used for subjecting the m urethra to diathermy, there was no passage instruments into the urethra. One of the elect was placed in apposition with the prostate, the oth with the penis. It is just possible that the inclusion the prostate in the diathermy may prevent metasta infection.

In the discussion on the uses of diathermy in disea of the prostate I should like to hear the experien of the surgeons who have employed the operatio introduced by Luys for punching out that part of th middle lobe when it obstructs the urethra. My ow experience of diathermy in senile enlargement of th prostate is mainly restricted to that of a few cas in old men who were unfit for surgical operatio I treated them by *medical* diathermy, but it is doubtf whether they derived any benefit. Quite recently however, I have had three cases in men aged 60, 6 and 60 respectively. In these cases the sympto of obstruction were not of long duration. The patie complained of difficulty in emptying the bladder rising in the morning, and of the necessity of getting up at night to micturate. Diathermy removed the symptoms. One patient has been free for th months, another for the same length of time, and th third for 16 weeks. It is possible that the obstructio in these cases was due to congestion of the enlarg prostate. Diathermy would be expected to remove

DISEASES OF JOINTS.

It is probable that most of those who are pres have been troubled with difficult cases of arthri Those who practise the physical branches of medic are troubled with them all the time. If the ca sent to the electrical department of a hospital we classified numerically it would probably be fo that arthritis headed the list. If they were classi in accordance with the degree of benefit derived fr electrical treatment it would have been found, bef the days of diathermy, that arthritis came near th bottom of the list. Since the advent of diatherm however, it has obtained a better position. Near th top of the list would be placed gonococcal ar In the treatment of this type of joint disease it imperative that the prostate and vesicles (in me and the cervix uteri (in women) should be sub to the diathermy. It is not necessary to apply it the joints themselves. This form of treatment bri he arthritis to an end, and it does so—in my experience—invariably. If the cases are early it can truthfully be said that cures are obtained. In late cases, in which permanent structural changes have occurred in the joints, the arthritis is arrested. The fire is extinguished, and it remains to effect such repair of the joints that can be brought about by means of physical treatment. If non-gonococcal infective arthritis in women is investigated, it will frequently be found that cervicitis exists, even though there may be no outward or visible evidence of it, and no notice of it on the part of the patient. In cases of this kind the application of diathermy to the cervix will bring the arthritis *to an end in about 75 per* cent. of the cases.

It is probable that infection of the *prostate* by organisms other than the gonococcus can give rise arthritis in men. I have had cases which presented bacteriological evidence of gonococcal infection and gave no history of it. In some of these the treatment of the prostate and vesicles by diathermy brought the arthritis to an end. It is possible that ro of the cases would have responded to the tment if the diathermy had been administered the *urethral* instead of the *rectal* route. The cles can be heated to the highest temperature by rectal route, but in order to heat the whole state to the same degree an active electrode uld be introduced into the posterior urethra. A ecial electrode has been devised for this purpose Dr. G. F. Stebbing. I have not yet used it, but e treatment of the prostate by the urethral route is well worth investigation.

There is another variety of arthritis in women hich responds well to pelvic diathermy. I refer the type which is recognised by some workers and med *menopausal arthritis*. It occurs just after, a little before, the cessation of menstrual life. The menopause may, in fact, be premature. The patients y that they have increased in weight or become outer. On examination it is found that there are ds of tissue resembling fat just above the knees d in the upper arms. It is in the knees that pain often felt. In these joints the synovial membrane thickened. The treatment of this type of arthritis pelvic diathermy relieves the pain and causes e disappearance of the pads above-mentioned. If e cessation of menstruation is premature the return the periods is often observed by the patient. These ts have led my co-worker, Dr. Robinson, to formue the theory that this type of arthritis is due disturbance of the endocrine function of the *ovaries*. has an interesting collection of cases of this kind the London Clinic.

It is too soon to speak about permanence of results, t if the cases are treated before permanent organic anges have taken place in the joints, it is possible at real cures may be obtained. Two private patients rsonally known to me had the treatment in the rly stages of their complaint. One was treated months ago, and the other four years ago. Both w are perfectly well.

Before leaving the subject of arthritis I would like present the following hypothesis as a "bait" to ose present in case any member might "rise to it." suggest that there is a "climacteric" arthritis ich may occur in men at the time of life when anges occur in the prostate. Men are prone to velop arthritis between the ages of 50 and 60, and know of cases in patients at this time of life which ve derived considerable relief after prostatic athermy. Apart from clinical results, however, is is a matter for speculation, and he who possesses the largest amount of clinical and pathological knowledge and the greatest agility in argument will outrun his opponent in the discussion.

DISEASES OF THE CIRCULATORY SYSTEM.

There are some diseases of the circulatory system for which diathermo-therapy is recommended by certain authorities. The late Sir Clifford Allbutt was a strong advocate of the use of high-frequency currents for *hyperpiesia*. In an article on the subject by him in the "Index of Treatment" (8th ed.) he mentioned that Lewis Jones had likewise obtained good results and attributed them to diathermy. Speaking from my own experience, I should say that the few cases which have been referred to me derived further benefit from general diathermy after general medical treatment had been instituted. Pain in the chest, dyspnœa, and headache were relieved. In regard to its effect on the *blood pressure* general diathermy, in my experience, reduces both the systolic and diastolic values, but if they are not very high at the commencement of the treatment (say in the vicinity of 200 mm. systolic and 100 mm. diastolic) they return in a day or two to their original values. But if they are much higher at the beginning of treatment the reduction is more sustained. It lasts, at any rate, during the period of the course of treatment. In regard to subsequent values as time goes on I cannot say much. Two patients have been under my care for a number of years. They obtain relief from diathermy, go away, and return after 6 to 12 months saying that their symptoms have returned. I find that the blood pressure is sometimes at its original value, sometimes a little lower. Relief is again obtained from diathermy, and they go away for another period until their symptoms return.

In the treatment of *angina pectoris* diathermy has been recommended by Prof. John Hay. It was originally advocated for this disease by Nagelschmidt, the German protagonist of diathermy. Dr. John Dyson has procured freedom from attacks for periods as long as two years. Some of his cases, I believe, were sent to him by Prof. Hay. I have had no experience of cases in which there were sudden attacks of violent pain. Other cases in which the patients complained *of pain in the chest* only during exertion ("angina without agony") have been referred to me for diathermy. Three out of five cases said they felt no better after the treatment. In the fourth case the patient had no pain for at least six months after a course of diathermy. The fifth patient said she did not feel much better directly *after the diathermy*. But soon after her return to her home in the country she wrote to say that she had lost all her symptoms and was able to walk up hills without feeling pain or shortness of breath.

In regard to *intermittent claudication*, I am rather disappointed with the results of diathermy. Some of my cases appeared to have been quite distinctly benefited by diathermy. These cases were in very active and hard-working men, but rest had been prescribed for them by the good physician. In two cases the prescribed rest could not be obtained, and no benefit was derived from diathermy. The limping persisted. In one of the cases, however, there was a complaint of pain in the foot which kept the patient awake at night. This symptom disappeared.

DISEASES OF THE LUNGS.

The treatment of *lobar pneumonia* by diathermy has caused much comment. Several hundred cases have been treated by its means in the United States by Eaton Stewart. Much has been said for and against this form of treatment. It has been tried by Dr. Morley Fletcher in this country in 12 cases. It was found to relieve pain and procure sleep. The patients preferred it to poultices and antiphlogistine. In the West Middlesex Hospital 200 cases have been treated under the direction of Dr. Robinson. Diathermy has been adopted there as the standard treatment, and a small ward has been equipped for the purpose. It is much too soon to say anything final in regard to the effect of diathermy on the mortality-rate.

Pulmonary diathermy has also been recommended for the so-called *idiopathic asthma.* My own experience is limited to two cases which had resisted other forms of treatment. The patients liked the treatment, and said that their attacks were less severe and frequent during the course of diathermy.

DISEASES OF THE ALIMENTARY CANAL.

There is not much to say on the effects of diathermy in diseases of the alimentary tract. In *mucous colitis,* however, I have found pelvic diathermy of high value. The cases I have treated have been in young women. The treatment administered twice weekly for three or four weeks caused the disappearance of the mucus and a reduction of the frequency of defæcation until properly formed stools were passed once a day. Some of the patients relapsed, but repetition of the treatment had the same effect. Dr. Claughton Douglass has treated some cases by the same method and has had good results.

In painful *fissure of the anus* I usually find that rectal diathermy gives prompt relief. Pain due to internal hæmorrhoids has always been relieved by the same treatment in the few cases which I have had under my care. There are some workers in this country who employ surgical diathermy for the treatment of hæmorrhoids. Others destroy them by fulguration (desiccation).

DISEASES OF THE SKIN.

Certain abnormalities of the skin can be well treated by surgical diathermy or fulguration. Smooth non-contracting scars are left after the former. After fulguration, as I have already said, the reaction is scarcely noticeable and the scars are perfect. Papillomata of the skin can be soon dried up, by fulguration, into small hard masses which can then be picked off. The same method is rapid and effective for the so-called "mulberry nævus," for capillary nævus, for telangiectasis, for flat and pedunculated warts, and for pigmented areas of skin. For epithelioma of the skin surgical diathermy is a most useful form of treatment. I have had at least one case where it succeeded after radium had failed. Diathermic coagulation and fulguration are both of value in cases of *lupus vulgaris.* Of the two I prefer the latter, because the scab following the treatment acts as a protective dressing and covers the treated part until healing is complete, whereas after diathermic coagulation the slough has to separate, leaving, for a time, an open wound. In the treatment of lupus vulgaris by these electrothermic methods the chief difficulty is experienced in cases presenting scarred areas with persistent nodules after other forms of treatment have been tried. I have kept one case under observation and occasional treatment for 15 years. It was sent to me after a course of X ray treatment. Fulguration caused the nodules to disappear. But as time elapsed minute areas of recurrence were observed. Further fulguration was always successful, and it is interesting to note that the scars maintained their good character, despite the repetition of the treatment. One area, not treated by X rays, showed no recurrence after the first fulguration which was given ten years ago, and the scar remains as good as ever.

DISEASES OF THE EYE.

Diathermy is of value in certain diseases of the orbit and eyelids. It was employed by Iredell and Meadows-Ryley as far back as 1918 in some cases of *glaucoma.* In a few of them the pain was relieved and the tension reduced. Howitt and Morgan employed it successfully in cases of iridocyclitis. In a publication in the *British Journal of Ophthalmology,* August, 1930, Figdor described his results in the treatment of certain eye diseases. He found that chronic senile conjunctivitis invariably did well. The major number of cases of cyclitis and iridocyclitis were relieved, and a few were apparently cured. In glaucoma the tension was reduced—at any rate temporarily—and in two cases it appeared that the condition had been arrested.

In two cases of *gonococcal iritis* which have been under my care the pain was at once alleviated by orbital diathermy, and the inflammation was [illegible] to an end. In these cases the treatment was [illegible] ploted by subjecting the primary infective foci [illegible] diathermy. In one of them an iridectomy [illegible] afterwards performed without any misadventure. Dr. Robinson successfully treated two cases [illegible] iridocyclitis by applying diathermy *to the cervix* and freeing it from the infection which was present in the last-mentioned part. The eyes themselves were not treated directly.

Xanthelasma palpebrarum can be successfully treated by fulguration. I find it necessary, after a preliminary application of sparks, to scrape away the dried part and then repeat the application. The dried layer is again removed, and the process repeated until the xanthelasma is wholly removed. The residual scars are soft and inconspicuous, and they do not shrink.

DISEASES OF THE UPPER AIR PASSAGES.

It is in the treatment of malignant disease of these regions that surgical diathermy has some of its most meritorious results. On this subject there is little I can say that the surgeons do not know themselves. In regard to technique the placing of the active electrode *on the surface* of the tissue that is to be killed has the disadvantage that the operator has insufficient knowledge or control of the depth to which the coagulation proceeds. If, however, a single needle is used in place of the disc or ball electrode and introduced into the tissue the depth of coagulation is much more under control. It proceeds no more than 2 or 3 millimetres beyond the point of the needle. If a malignant growth is eradicable, the needle can be inserted in the healthy surrounding tissue in closely adjacent parts, the process being repeated until the growth is enveloped all around in a barrier of coagulated tissue, and isolated from the healthy parts. A portion can then be cut out for examination, and the remainder coagulated by means of a surface electrode, or—better—excised by the cutting current. The practice of coagulating [illegible] malignant growth and then scraping away the coagulated portion is, in my opinion, not to be recommended. Bleeding is very likely to occur, and one of the great advantages of properly conducted surgical diathermy is lost. The use of a scalpel [illegible] an active electrode for the purpose of com[illegible] cutting with coagulation is also, in my opinion, [illegible] faulty method and should not be used for the removal of malignant growths, at any rate when they are vascular. It is a blind method, and the o[illegible] is unable to see the point or edge of the knife nor ie tell whether he is cutting through living or oagulated tissue.

It would be of interest to hear the opinion of the aryngologists on the *removal of tonsils* by the electro-hermic methods. The public have heard about a ew method of removing tonsils "which does not eed a stay in a nursing home or a general anæsthetic." here has also been some recent correspondence on he subject in the medical journals. It would seem hat diathermic coagulation of septic tonsils would vert the spread of infection which is a risk that ttends excision by the scalpel.

Use of the Cutting Current.

Machines are now made for generating a special gh-frequency current capable of dividing tissue and, the same time, coagulating the divided surfaces d sealing the microscopic vessels as they are severed. ealing by primary union will take place, but it seems at the current has to be modified for each type of sue—skin, fat, and muscle—if such union is to take ce. A machine has been constructed under the direc- of Prof. Harvey Cushing and Prof. W. T. Bovie o United States. It is employed by the former he excision of cerebral tumours. In this country pioneer worker with the cutting current is John lerson, of Dundee. His work on the removal of cancerous breast by its means is well known. London the cutting current has been employed Mr. G. Gordon-Taylor, Mr. Sampson Handley, r. Girling Ball, Mr. Douglas Harmer, Mr. J. E. H. oberts, and others. Mr. Roberts uses it for his erations on the chest wall. The cutting current a new weapon in surgery, and it will be interesting hear the experience of the surgeons who have ployed it.

CANCER AND TUBERCULOSIS:

THE DEVELOPMENT OF MALIGNANCY.

BY THOMAS CHERRY, M.D., M.S.,
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THE aim of this paper is to elucidate the part played the lymphocytes in the development of malignancy. the course of experimental work on the relation of ncer to tuberculosis the gastro-splenic region has en examined by microscopic sections in 625 mice. out half of these had been inoculated with small ses of tubercle bacilli; the others were control imals of the same strain, kept under similar condi- ns of food and surroundings until death took place m natural causes. In the inoculated animals a all-cell infiltration, consisting almost exclusively lymphocytes, is often found in the fat about the enic vein as well as in other parts of the body. id-fast bacilli are not common, but they have been nd in the spleen and enlarged lymph glands and ong small dense collections of lymphocytes. In second year of these experiments an outbreak of udotuberculosis began which has involved both inoculated and the control mice. The disease is of omewhat peculiar type, as the liver is the organ st commonly involved, the lesions not infrequently ending to the adjoining organs and tissues. The gs are affected in about one-third of the cases. the cells in these lesions are predominantly poly- rph, this spontaneous epidemic has afforded terial for a comparison of two inflammatory ditions, each characterised by its special type of ite blood corpuscle.

In the mouse the pancreas is of the diffuse type common to most of the rodentia. It extends from the curve of the duodenum, behind the curvature of the stomach, to the spleen and left kidney. Small and large clusters of lobules ramify in this region, attached to these organs and to the retroperitoneal structures by delicate strands of connective tissue. The organ can hardly be described as consisting of lobes, as the clusters of alveoli vary greatly in size and arrangement. The secreting cells are of the ordinary pancreatic type, cubical or low columnar in form, containing rounded nuclei which may stain uniformly or show five or six nucleoli. A section of an alveolus usually shows six or eight cells. Very fine clefts between adjoining alveoli give a characteristic appearance to the sections. Islets of Langerhans are common in the larger clusters of lobules. In most instances of infiltration masses of lymphoid cells—presumably enlarged glands—are found near the pylorus and between the stomach and spleen, more or less surrounded by lobules of the pancreas.

Mice inoculated with very small doses of tubercle bacilli of the human or bovine type show no symptoms of being in any way abnormal for perhaps several months. Acid-fast bacilli have, however, been subsequently found in the spleen and enlarged lymph glands of these mice when death has occurred 10, 12, and 16 months after inoculation. In three cases a tuberculoma has formed, and this group of mice exhibited in addition the following lesions: enlarged spleen and lymph glands, lymphocytic infiltration of the subcutaneous tissue near the site of inoculation, small-cell infiltration of the liver, lymphoid marrow, and leukæmic blood.

Pseudotuberculosis is the name given to a number of diseases in the lower animals which have no close relationship to one another but have this point in common: that they are not in any way connected with the tubercle bacillus. To the naked eye the lesions consist of nodules closely resembling miliary tubercles. In my mice the lesions are found in the lungs, pleura, myocardium, intercostal muscles, and subcutaneous tissue; in the abdomen the liver, peripancreatic fat, and walls of the stomach are affected. By the coalescence of many nodules a large part of one or more lobes of the liver may be replaced by necrotic tissue. Under the microscope the appearances are not unlike those of an ordinary abscess, except that granulation tissue is scanty. The necrotic focus is bounded by a broad area of cells, most of which are polymorphs; among them there are large cells which usually have a single small round nucleus lying in clear hyaline cytoplasm. There is no appearance of giant cells. The capillaries lying further from the centre are often engorged, but fibroblasts are scanty and there is no capsule. Outlying lines and areas of cells usually exhibit more than 60 per cent. of polymorphs.

The presence of such nodules in mice inoculated with tubercle bacilli raises the question whether they are not tuberculous, the absence of the typical histology of the tubercle being of little weight as evidence when the animal is a small rodent. The nodules have been carefully searched for acid-fast bacilli and injected into guinea-pigs, with negative results. The absence of the lymphocytic reaction is also strong negative evidence.

The phrase "unstable lymphoid system of the mouse" is met in current literature. This idea is based upon such facts as the wide divergence in the blood counts from the same animal when taken at short intervals, the frequent occurrence of a large spleen with or without enlarged lymph glands, and other conditions resembling those of leukæmia or pseudoleukæmia. Mice with such a syndrome may have lived to the average age, but in some instances they have been proved to be the carriers of one or other infective disease. The carrier problem has also come up in regard to other laboratory animals. Steps were taken to minimise these conditions in my mice three years ago, and they are much less common now than they were in the progenitors of my stock, which now numbers about 1200 mice. Hence I am inclined to regard all such lymphoid conditions as dependent on some pathological condition, even if we are ignorant of its exact nature.

Experiments.

In order to compare the appearances seen in the pancreatic region, 50 mice have been selected from each class—control mice with pseudotuberculosis and those inoculated with tubercle bacilli. A summary is given of the findings in 12 mice from each of these groups, eight representing the intense grade of infiltration and other changes and four the less marked and presumably earlier stage of the same lesions, but the sequence of the microscopic signs of each reaction is uniform in all of the 50.

PSEUDOTUBERCULOSIS AND CHANGES IN THE PANCREAS.

(287). Nodules of pseudotuberculosis in the wall of the stomach, and the usual zones of infiltration with polymorphs. Two clusters of lobules of the pancreas lie between two enlarged lymph glands. They retain their normal appearance as to cells and nuclei and contain two islets. The lymph glands contain much blood, but the cells are not densely crowded together. The blood in a large vessel is leukæmic, the white cells being 87 per cent. polymorphonuclear.

(299). An extreme case of pancreatic cells disappearing in an adhesion at the pylorus. Individual lobules are surrounded by a finely fibrillar tissue containing many fibroblasts. Their nuclei are still arranged in imperfect circles, but very little cytoplasm is left around them. Further from the muscular coat the pancreatic alveoli are little altered, but are infiltrated with polymorphs. A dense cluster consists almost exclusively of those cells. Fibroblasts are abundant on the free peritoneal surface of the adhesion.

(305). A pseudotuberculosis adhesion containing a cluster of nodules has formed between the liver and pylorus. The enclosed lobules of the pancreas have almost completely disappeared, some alveoli being represented by a complete circle of nuclei and others by one or two nuclei the identity of which is certain, or by nuclei whose identity is doubtful. Polymorphs and fibroblasts are common on the edge of the adhesion. In an adjacent hepatic venule the blood count is 66 per cent. polymorphs.

(326). A small pseudotuberculosis nodule in the liver and a well-organised adhesion between the pylorus and pancreas are seen in this section. The adhesion consists of fibroid tissue in which are many blood-vessels. The lobules of the pancreas lying in it are easily recognised, but the alveoli are more widely separated than usual. On the edge of the adhesion some of the pancreatic cells lying among the fibrillæ consist of a normal nucleus lying in a pear-shaped cell. There are no indications of activity in the nucleus. An adjacent lymph gland is not densely crowded with nuclei and contains many polymorphs. In the duodenum Brunner's glands are far more cystic than normal; their nuclei are unchanged.

(332). There are many nodules in the liver and walls of the stomach, with widespread infiltration and adhesions. Pancreatic cells are embedded in the inflammatory tissue on both aspects of the stomach. The lobules are becoming indistinct and the alveoli broken up, until all signs of their identity disappear. On the edge of the adhesions the polymorphs represent 80 per cent. of the infiltrating cells.

(385). A large cluster of nodules lies between the organs in the gastrosplenic region. A portion of the pancreas adjoining the stomach is infiltrated and is disappearing among the polymorphs and fibroblasts. In all parts of the infiltration the polymorphs greatly preponderate.

(407). A thin margin of the liver forming part of the capsule of a large pseudotuberculosis mass compresses the lobules of the pancreas which adjoin the pylorus. There are many polymorphs and fibroblasts in an early adhesion, while the alveoli of the pancreas are irregular in size and shape and are disappearing in the infiltration with which they are surrounded.

(351). This is an early stage of infiltration, several pseudotuberculosis nodules being embedded in the adjacent lobes of the liver. There is a large pancreatic lymph gland showing the characteristic light-staining areas of polymorphs. The pancreas shows early infiltration with polymorphs, which are lying in the clefts between the lobules, between the cells of the alveolus, and around the margin of the islets. Hence the clefts and the alveoli appear to have a more open structure than normal. The blood is leukæmic in a large vein. Other parts of the pancreas appear normal.

(352). An early stage of infiltration of the lobules at the pylorus is combined with a condition of the liver indistinguishable from that in the preceding mouse, the description of which will serve also for Nos. 338 and 207.

THE PANCREAS IN THE INOCULATED MICE.

(10). Inoculated between the shoulders with 120,00[illegible] tubercle bacilli, this mouse died ten months after, aged [illegible] months. It was small and wasted and had very large glands in the neck, extensive lesions in the thorax, and a tumour 1·5 cm. in diameter in the gastrosplenic area. The tumour consists mainly of small round cells with deeply staining nuclei, and a necrotic area contains immense numbers [illegible] acid-fast bacilli. In parts it has a pseudocapsule formed of round and spindle cells and fine fibrillæ. By way [illegible] adhesions, the round cells penetrate the capsule of the [illegible] and the coats of the stomach and separate the panc[illegible] lobules. The sections of the lobules have lost their n[illegible] shape and those close to the capsule are quite unrecogni[illegible] as the cells lie in irregular clusters or singly amidst the s[illegible] cell infiltration. They are often elongated into oblongs [illegible] triangles with two or three large vesicular nuclei. [illegible] cytoplasm of such a cluster appears to have fused. [illegible] of the large nuclei contain two or three small deeply [illegible] points of chromatin.

(44). This mouse died 13 months after inoculation, [illegible] a spindle- and mixed-cell sarcoma at the point of [illegible] similar growths in the subjacent axillary glands, and a large liver, half of which consists of sarcoma tissue of [illegible] same type. A large area of the pancreas lying [illegible] liver and spleen shows the ordinary separation of the lo[illegible] from one another. Within the alveoli the cells have their normal arrangement and often also their normal [illegible] They are smaller and more irregular in outline than n[illegible] and there is no trace of the two zones. The nuclei a[illegible] very often vesicular, and sometimes exhibiting [illegible] nucleoli. The tissue of the stroma also appears to be acti[illegible] the elongate nuclei and the capillary blood-vessels [illegible] distinct, while the prominent nuclei of the ducts make [illegible] structures stand out in a manner quite unusual in the [illegible] There is no great amount of small-cell infiltration in [illegible] instance.

(33). A young mouse inoculated with 100,000 [illegible] bacilli; it died after four months, aged 8 months. [illegible] a fibrocellular adhesion at the pylorus in which the [illegible] cells are 90 per cent. lymphocytes. It contains [illegible] lobules of the pancreas, which closely correspond with [illegible] described in the preceding mouse. Some are little [illegible] except that the nuclei are very large and vesicular. [illegible] have lost their normal shape and arrangement but still [illegible] the large conspicuous nuclei. Sections of the [illegible] ducts are very numerous in this specimen; their [illegible] has large deeply staining nuclei which sometimes to[illegible] another where they form a ring round the lumen.

(112). A small mouse which died 12 months after in[illegible]tion with 25,000 tubercle bacilli. The chief lesion [illegible] adenocarcinoma of the stomach, the walls of which [illegible] heavily infiltrated with small cells. An adhesion [illegible] part of the pancreas which shows large areas of lobules [illegible] the clefts distinct, the alveoli being replaced by cells [illegible] close together, not arranged in tubules or circles, [illegible] possessing large nuclei, which often almost fill the bo[illegible] the cell. The vessels and ducts of the pancreas also [illegible] large and prominent nuclei.

(851, 894, 909D, 950). These illustrate the early sta[illegible] proliferation of the pancreas. Most of the lobules in a s[illegible] section are normal, but in the neighbourhood of an [illegible] or of a small well-defined collection of lymphocytes, [illegible] cells may be traced between the lobules, and changes [illegible] shape and arrangement of the cells, and especially in [illegible] appearance of the nuclei, become apparent. No. 44 may [illegible] taken as a type of these four mice.

(667, 820, 849, 963). These are advanced cases. [illegible] are lymph glands more or less surrounded by the lobu[illegible] the pancreas. The small-cell infiltration is often [illegible] and extends through many adjacent lobules. In most [illegible] these cases lobules are also embedded in an adhesion [illegible] pylorus. In about half the advanced cases the lobu[illegible] closed up, in half they are more widely separated by [illegible] infiltration. The alveoli have lost their normal outli[illegible] are represented by one or two or a clump of half a [illegible] cells. The shapes, as already indicated, may be [illegible] bizarre. The nuclei are large, roundish, and very prom[illegible] and there are often two in a single small, misshapen cell. One or two prominent nucleoli are always present, but signs of mitosis are rare. In about one-fourth of this group of mice the interlobular tissue with the ducts and blood-vessels shows signs of similar activity.

Of the 12 mice inoculated with tubercle bacilli, three are examples of the reaction of the pancreas when associated with the presence of tuberculoma, sarcoma, and carcinoma respectively. The others were selected from the mice in which there is no tumour in order to illustrate varying stages of the same process. The phenomena in all cases are the same, and the proliferative changes may run on to malignancy. There have been four examples of carcinoma simplex in which the lobules have not only lost their boundary clefts but have run together over areas measuring 5 mm. or more in diameter. There are no indications of alveoli in these areas, and the cells in all parts lie in contact with one another and are often irregularly polygonal or even spindle shaped, with the signs of activity in the nuclei as definite as those already described. Sections of these tumours and also the following case of duct carcinoma are illustrated in my former paper.[1]

CASE OF DUCT CARCINOMA OF PANCREAS.

5). A mouse inoculated with 5000 tubercle bacilli, which died after seven and a half months, aged 13 months. The abdomen, which contained 5 c.cm. of ascitic fluid, was distended by a very large spleen on the left and a firm tumour on the right. The tumour is adherent to the liver, stomach, duodenum, pancreas, and right horn of the uterus. A large part of it is composed of a fibroid stroma containing several large irregular cavities, apparently derived from the pancreatic ducts. There are also many irregular alveoli more or less filled with low cubical cells or lining an irregular cavity filled with coagulum. These epithelial elements are found in all parts of the tumour and are reproduced in an enlarged lymph gland lying on the border of the main mass. The alveoli are conspicuous objects in all parts of the tumour

Discussion.

The character of the response to these two bacterial irritants is singularly uniform, and it is the more impressive in the first group when it is remembered that the normal blood count of the mouse appears to be 40 per cent. polymorphs and 60 per cent. lymphocytes. Yet in the mice dead of pseudotuberculosis the infiltrating cells round the pancreas are almost exclusively polymorphonuclear. They are accompanied by enlarged lymph glands and adhesions to adjoining organs and structures. The enlarged glands are all of the one type, consisting largely of cells resembling polymorphs, not very closely packed together, and they often contain large sinuses full of blood. As the infiltrations run into the adhesions lobules of the pancreas often become involved, but cells remain passive, even when they are smothered with polymorphs. The lobules may be separated by invading cells and the alveoli disintegrated, but secreting cells seem to disappear without making any attempt to proliferate.

In mice inoculated with tubercle bacilli the picture is made up of infiltrations, enlarged glands, and adhesions corresponding to those of the former group, so that diagnosis is only possible by the naked eye or hand lens if the observer can see the little necrotic points of pseudotuberculosis. But with the microscope the two pictures are quite distinct. The tuberculous reaction, instead of separating the cells of the pancreas, causes them to close up their ranks. Many of the cells in adjoining alveoli show two or three large vesicular nuclei, often with confluent cytoplasm. Small isolated cells, recognisable as pancreatic, have the large prominent nucleus, and these nuclei persist even when lobules are pressed into areas of cells by pressure from an adjacent tumour. In consequence of this prompt response the clefts between the lobules disappear and the inoculated mice present all stages of the process until the appearances end in uniform sheets of small dedifferentiated pancreatic cells still retaining their large prominent nuclei.

The numbers of mice dealt with in the foregoing sections are large enough to be significant, and as they are all of one stock a possible source of error is eliminated. As mice are not quickly killed by small doses of tubercle bacilli nor—in this outbreak at least—by pseudotuberculosis, our results may be looked upon as examples of the action of chronic inflammation. The polymorphic exudation ran on towards the formation of fibrous adhesions, which may ultimately cause atrophy of the cells of the pancreas and in some cases of those of the gastric glands also. The lymphocytic inflammation, on the contrary, was accompanied by proliferative changes in the cells of the pancreas and sometimes in those of an adjacent organ.

The action of many agents which may form the basis of a malignant growth in the human body is regularly accompanied by a lymphocytic reaction. Amongst such agents are tar, lubricating oils, burns, lupus, and X rays. On the other hand, a suppurating surface, so long as the pus is polynuclear, seldom becomes malignant. In a former paper I pointed out that the lymphocytic reaction appears to be the connecting link between the tubercle bacillus and malignancy. Other experimental cancers in mice seem to indicate that the overcrowding of the lymphocytes is an essential factor in the process. As these cells consist of a nucleus with very little cytoplasm, an overcrowded area appears to consist of nothing except nuclei. In some of the mice, in section of the marrow or lymph glands, they look like a hexagonal pavement, mutual pressure altering their shape. Such conditions appear ideal for the occurrence of anaerobiosis, which, according to Warburg and his school, is an essential factor in the change to malignancy. Anaerobic autolysis of or autolysis by lymphocytes is a probable source of the growth-stimulating substances, and such substances may act on any cells which they reach and which are ready to react. Pathologists who accept this view account for the unrestricted growth of a cancer by pointing to the facility with which continuous supplies of the stimulus may be derived by anaerobic autolysis of tumour cells which have lost their full vitality. The tumour thus becomes self-supporting. On this hypothesis it is probable that any original focus of lymphocytes will disappear by being replaced by the tumour soon after its growth has become rapid.

Ewing remarks[2] that the process excited by the tubercle bacillus may " progress of its own momentum and gradually acquire neoplastic properties." My interpretation of this sentence would be that the momentum is proportionate to the crowding of lymphocytes in places where anaerobiosis is easy—oxygen starvation being presumably more difficult in the lungs than in the bone-marrow or a lymph gland—and the acquisition of neoplastic properties depends on the supply of growth-stimulating substances coming from an anaerobic mass of cells. The lesions found in the mouse are very suitable for the study of their relationship to one another, because the continuity of lines of cells may be traced in a single section from organ to organ. For example, an infiltration of the retropancreatic fat may be followed through the pancreas to an adhesion and thence through the coats of the stomach into the submucous tissue.

The transference of the data given in this paper to the pathology of human cancer is, to a large extent, a matter of inference. Such inferences are not improbable in the case of Hodgkin's tumour and in that of lupus changing to carcinoma, but their wider application may be strengthened by a statistical investigation into the incidence of the two diseases.

STATISTICAL STUDIES.

Ninety years ago Walshe,[3] the pathologist to University College Hospital, stated that "tubercle and cancer possess a sort of repulsion in respect of each other." He found only seven cases of active phthisis in 104 autopsies of cancer. This antagonism was emphasised by Rokitansky, of Vienna, in 1854, and thereafter the co-existence of the two diseases was looked upon by most pathologists as the exception which proved the rule. In 1929 Raymond Pearl[4] published the evidence obtained from the records of the Johns Hopkins Hospital and, after providing for a rigid system of controls, he confirmed the findings of the older pathologists, establishing the fact that only 7 per cent. of those dying of cancer had active tubercle, and conversely that those dying of phthisis very seldom had a tumour. On the other hand, evidence of healed or obsolete tubercle was just as common in cancer cases as it was in patients dying of other diseases.

In 1924,[5] from an analysis of the deaths in the occupations at the three census periods, I showed: (1) that the incidence of cancer in nearly all the large occupations in 1911 was proportional to the incidence of phthisis in the same occupations in 1891; (2) that the increase in the deaths from cancer cannot be explained by the increase in the number of men who attain the age of 55. The question of the accuracy of diagnosis is not involved in these results, because the deaths occurred at the one census period and any correction would simply shift all the numbers in the same direction.

In my next paper[6] corresponding results were shown to hold for the whole adult population of England and Wales. After discussing the probable order of the corrections necessary to bring the diagnosis in former periods up to our present standard, it was shown that the combined deaths from phthisis and cancer were always close to one-fifth of the total deaths —except those from accident—after the age of 25. The increase in cancer regularly compensated for the decline in phthisis. In consequence of this relation, the combined mortality-rate has varied only slightly during the past 40 years. From converging lines of evidence I inferred that cancer attacks the moiety of the 20 per cent. of the population which has not died of phthisis. There is good evidence that the great majority of the adult population has been in contact with tubercle bacilli and that opportunities for reinfection are still very common. Hence the following questions require to be answered in the light of experimental work:—

1. Is it possible that tuberculosis and most cancers are manifestations of the same essential condition; the resistance of the body to invasion by the bacillus?
2. May not successful resistance to the bacillus in early life prepare the body to deal with a second invasion by different methods?
3. If acquired resistance to tuberculosis is the usual predisposing cause of cancer, may not the second invasion be the factor which precipitates the crisis in the life-history of the cells of the body?

I regard resistance to tuberculosis as a racial trait, and results obtained from English statistics cannot be applied directly to other people. To take an extreme instance, among the South Sea Islanders tuberculosis is nearly always rapidly fatal. For some reason malignant disease is remarkably rare. The same conditions prevail also among the Australian aborigines. But in races long in contact with tuberculosis the lymphocytes seem to become intent on encompassing the invading bacilli. Sometimes they overshoot the mark, collecting in such dense masses that those in the centre are strangled and an inevitable autolysis thus initiates the fatal series of changes.

SUMMARY.

1. The histological conditions involving the pancreas in 60 mice dying of pseudotuberculosis are compared with those found in 60 mice which had been inoculated with tubercle bacilli and were free from pseudotuberculosis.

2. In the former group there is an exudation of cells, chiefly of the polymorphonuclear type, which may run on to the formation of adhesions to adjoining organs. No sign of proliferation of the secreting cells of the pancreas is found.

3. In the second group the infiltration of the pancreatic area is mainly lymphocytic in charac Proliferation of the secreting cells of the pancreas signs of activity in the fibroblasts of the adhe become common. In the 50 mice there are instances of carcinoma of the pancreas, a condition hitherto described in this animal.

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THROMBO-ANGIITIS OBLITERANS IN SIAM.*

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Thrombo-angiitis obliterans may be defined a chronic thrombosing process involving the peripheral arteries and veins. In the early a soft red clot consisting of erythrocytes and fills the lumen of the vessels; this clot in time goes vascularisation and organisation. Von warter[1] described the first case of thrombo- obliterans in 1897, and noted a proliferation of intima with an inflammatory reaction of the of the vessels. Buerger,[2] in 1908, reported a group of cases in the Jewish race, and to him we the first accurate description of the changes and clinical features. Since 1908 groups of cases have been reported from various of the world, including China, Japan, and the Fed- Malay States. The original impression that condition was almost entirely confined to Ru- Jews is no longer accepted, for in a large series of reported recently from the Mayo Clinic by Brown Henderson[3] the percentage of Jews was just over

The disease usually affects males between the of 25 and 40 years. In the West 90 per cent the cases have symptoms referable to the extremities. In 30 per cent. there is some of arterial obliteration in the upper extremities; in 5 per cent. of the cases the lesions in the are the outstanding feature. The symptoms of disease are as a rule pathognomonic, but erroneously interpreted; the examination for pulsation in the peripheral arteries is frequently neglected and the true nature of the disease is not appreciated until trophic changes or gangrene have actually set in. There is no known specific causative factor, but the pathological changes certainly suggest an infectious basis, and Rabinowitz[4] has isolated an organism with which he has produced vascular lesions in rabbits similar to those found in this disease. His work, however, has not been confirmed by other investigators. Tobacco and exposure to cold are also said to play a part in its causation.

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Clinical Features.

By injecting the blood-vessels of amputated limbs which have been the seat of this disease it can be shown that the pathological process involves only the main vessels of the limb and is frequently patchy in its distribution. Small segments of the vessel become closed while other portions remain open, with the result that a collateral circulation develops above the occluded area; later, another segment closes and further collateral circulation develops. The eservation of the limb will naturally depend upon e efficiency of the collateral circulation. If the gments affected are large and the closure rapid the rognosis is bad, and conversely if the segments ffected are small and the closure slow the prognosis s good. If these injected specimens from amputated imbs are X rayed, the collateral circulation is shown o be well-developed, in striking contrast to cases of arterio-sclerosis, in which the main arteries to the imb are patent but the collateral circulation is almost completely absent.

The earliest symptom is inflammation of the uperficial veins, and to a lesser extent of the deeper eins as well, but unfortunately this only occurs in ather less than 30 per cent. of the cases. The most mportant of the earliest symptoms is intermittent laudication, which is present at one time or another n the great majority of cases. It is the result of a leficient supply of blood to the muscles; it comes on fter exercise and is relieved by rest. Usually it akes the form of a painful cramp but at other times may amount merely to an abnormal degree of tigue, without pain. This symptom is soon llowed by colour changes in the extremities, marked yanosis when the feet are dependent, and pallor hen they are elevated. Buerger's circulatory fficiency test gives an idea of the extent of the llateral circulation. It consists in noting the pidity and uniformity of the colour changes of the tremity, first in the dependent position and then ter an elevation of 180°. After the disease has rogressed a variable time the distal part of the mb becomes intensely red and cyanotic. These lour changes are succeeded by trophic disturbances d acute thromboses in individual toes; later ophic ulcers and gangrene develop and the type pain now alters. Instead of being intermittent d only during exercise, as in the early phases, it comes constant and severe, interferes with sleep, d is difficult to control. The disease is generally lateral and in many cases all the four limbs are fected; if the peripheral vessels are palpated lsation will be found to be absent or much minished.

In the hand intermittent claudication is not served; intermittent pallor and cyanosis are e initial symptoms. The condition rarely leads to ngrene of more than a few fingers. Consequently e disease is much more mutilating in the lower tremities than in the upper extremities, but when the upper limbs are involved persistent pain is a marked feature. The persistent pains, the trophic changes, and the gangrene, which are looked upon by many as the chief features of the disease, are but the final phases, for we know little or nothing of its beginning.

Diagnosis.

Confusion exists in the diagnosis of localised vascular disease for two reasons: firstly, the failure of the physician to examine for peripheral pulsation; and secondly, the erroneous idea that intermittent colour changes only occur in Raynaud's disease and erythromelalgia. In many cases these colour changes —which represent capillary reactions only and not the fundamental disturbances—are due to thrombo-angiitis obliterans, and if more careful examination is carried out it will be noted that the parts—although red in colour—are cold, that the red colour is constant only in the dependent position, and that vascular occlusion is evident. The condition for which this disease is probably most likely to be mistaken is arterio-sclerosis, but the differentiation between the two is generally not difficult. They occur at different periods of life: thrombo-angiitis obliterans between the ages of 25 and 40, arterio-sclerosis from 55 years onwards. Buerger's circulatory efficiency test, intermittent claudication, and absence of pulsation in the peripheral vessels are present in both diseases but the type of rest pain is quite different; in thrombo-angiitis obliterans it is sharp, stinging, and severe; in arterio-sclerosis it is usually mild and aching. In thrombo-angiitis obliterans the ulcers are usually moist, inflamed, and discharging, whereas in arterio-sclerosis they are usually dry. Colour changes, low temperature, and œdema are present in both diseases. The following table, modified from Brown and Henderson's paper on the "Diagnosis and Treatment of Arterial Vascular Disease," brings out very clearly the differential diagnosis of these two diseases.

TABLE I.—*Differential Diagnosis of Vascular Disease Affecting the Extremities.*

(Modified from Brown and Henderson.)

—	Thrombo-angiitis obliterans.	Arterio-sclerotic disease.
Pulsation of arteries	Pulseless, 50 per cent. Diminished, 45 per cent. Normal, 5 per cent.	Pulseless, 50 per cent. Diminished, 45 per cent. Normal, 5 per cent.
Excessive rubor with dependency	Present.	Present.
Excessive pallor with elevation .	"	"
Claudication ..	Usually present.	Usually present.
Gangrene	Common.	Common.
Rest pain	Usually very severe.	Usually mild.
Type of rest pain	Sharp stringing.	Aching.
Appearance of gangrenous ulcers	Moist, inflamed, discharging.	Usually dry.
Superficial phlebitis	30 per cent. of cases.	Absent.
Age (years)	Mostly between 25 and 45.	Mostly between 55 and 85.
Sex	Males, 99 per cent.	Males, 90 per cent.
Race	Hebrews, 50 per cent.	Any.
Rontgenogram of arteries	Usually negative for sclerosis.	Usually positive for sclerosis.
Colour changes following exposure to cold ..	30 per cent.	15 to 20 per cent.
Temperature of extremities	Low.	Low.
Œdema	Frequent.	Infrequent.

Analysis of Cases.

The number of cases in my series (15) is not large but serves to point out the existence of this disease in Siam and how it differs from that seen in western countries. Of the 15 cases 14 were males and one a female; 12 were Siamese and 3 were Chinese, the female being a Chinese. The age at the onset of symptoms has been noted in each case; the youngest patient of the group was 26 and the oldest 38, while the average age at the onset of the symptoms was 32. The majority of the patients have an outdoor occupation; 6 are farmers, 4 coolies, and 2 outdoor vendors, while a teacher, a civil servant, and a rice-miller account for one each. This does not necessarily mean exposure, as the climate of Bangkok reaches a maximum of 100° F. to 104° F. each year during the hot season and about 95° F. at some time or other during almost every month of the other seasons. During the hot rainy season, March to October, the temperature rarely falls below 80° F., and during the so-called cool season, October to February, the temperature rarely falls below 60° F. These patients go about without shoes and subject their feet to minor traumata which sooner or later precipitate the onset of gangrene. All except one in this series are heavy cigarette-smokers; the one exception is the female patient, and she habitually chews betel-nut. In addition to smoking cigarettes, six of them habitually smoke opium, six take Indian hemp, and six alcohol in excessive quantities. A number take all three drugs, opium, Indian hemp, and alcohol. These drugs were taken for the relief of pain in the first instance; as the pain increased in severity the dose was correspondingly increased. The Siamese, and particularly the Chinese, have less appreciation of pain than the European, so that in many cases the taking of opium and Indian hemp relieves the pain sufficiently, and if it is taken over a sufficiently long period it enables a natural cure to take place without any other form of treatment.

TABLE II.

No.	Nationality and occupation.	Sex and age at onset	Habits.	Limbs affected and duration.	Treatment.
1	Siamese; farmer.	M. 31	Cigarettes.	Both legs, 3½ y. Both arms, 4 m.	Per. symp. both arms; amp. toes.
2	Siamese; vendor.	M. 33	Alcohol, tobacco, opium, Ind. hemp.	Both arms, 4 y. Both legs, 3 y.	Per. symp. both legs; amp. toes.
3	Siamese; farmer.	M. 37	Cigarettes, Ind. hemp.	Both legs, 2 y.	Per. symp.; amp. toes.
4	Chinese; rice-miller.	M. 38	Alcohol, tobacco, opium.	L. leg., 4 y. R. leg, 4 m. both arms, 1 y.	Per. symp. both arms and R. leg. amp. toes.
5	Siamese; Coolie.	M. 38	Cigarettes, Ind. hemp, alcohol.	Both legs and both arms, 3 y.	Per. symp. both legs and arms, amp. toes.
6	Chinese; vendor.	M. 26	Cigarettes.	L. leg, 2 y.	Per. symp. amp. toes.
7	Siamese; farmer.	M. 35	Alcohol, tobacco, Ind. hemp, opium.	L. leg, 5 y.	,,
8*	,,	M. 34	Cigarettes, alcohol, Ind. hemp, opium.	R. leg, 3 y. L. leg, 2½ y. R. arm, 2 m.	Per. symp. both legs; amp. toes and fingers.
9	Siamese; gardener.	M. 27	Cigarettes.	Both legs, 4 y. Both arms, 3 y.	Per. symp. both arms and legs. Amp. toes and fingers.
10	Siamese; farmer.	M. 26	Cigarettes.	R. leg, 4 y.	Per. symp. amp. toes.
11	Siamese; civil servant	M. 32	Cigarettes, alcohol, Ind. hemp, opium.	Both legs, 5 y.	Amp. below knee, L. leg.
12	Siamese; dom. servt.	F. 34	Betel-nut.	L. arm, 6 y. R. arm, 2 m.	Medical measures.
13	,,	M. 36	Tobacco, opium.	Both legs, 2 y. Both arms, 2 m.	,,
14	,,	M. 26	Tobacco, alcohol.	Both legs, 3½ y. Both arms, indefinite.	Per. symp. both legs.
15	Chinese; teacher.	M. 30	Tobacco.	Both legs, 3 y. Both arms, 3 m.	Per. symp. both legs and arms.

* *Case 8.*—Wassermann reaction, + + +; in all other cases it was negative. y = years; m. = months. Per. symp. = periarterial sympathectomy; amp. = amputation.

The disease may affect one limb only and undergo a natural cure, or two legs or two arms may be affected, but generally one before the other. On the other hand, one leg may be affected, then both arms followed by the remaining leg, the disease in that way being spread over a period of four or five years; in other cases all four limbs may be affected simultaneously. The duration of the disease depends on the rate of development of the collateral circulation; it may be more than five years before a natural cure takes place, even with the aid of drugs, physiotherapy, and periarterial sympathectomy. Of the 15 cases, eight had all four limbs affected, one had three limbs, three cases two limbs, and three cases one limb. The average duration of the disease before coming for treatment in the eight cases where all four limbs were affected was 3 to 4 years; in the cases w three limbs affected, 3 years, two limbs 4·3 years, one limb 3·9 years, so that the length of time appe to have no bearing on the number of limbs affecte The Wassermann reaction was negative in all exc one case, and that was probably incidental.

The surgical procedures carried out have been confined to periarterial sympathectomy and amputation of fingers and toes. Only in one case was a major amputation performed and that was at the junction of the upper and middle thirds of the tibia; a small part of the tip of the anterior flap necrosed, but otherwise it healed satisfactorily. These operations are much less mutilating than the major amputations performed for this disease in western countries. In one case the dorsal interosseous artery in the right forearm was distinctly palpable and had taken the place of the right radial, illustrating again that in thrombo-angiitis obliterans only the main arterial trunk of the limb is closed, the other vessels being more or less normal—in contrast to arterio-sclerosis where the main arteries of the limb are patent but the collateral circulation is absent.

Treatment.

Unfortunately there is no specific treatment for the inflammatory process, but if the disease is diagnosed early and careful prophylactic treatment instituted to diminish the functional demands on the local circulation, much can be done to relieve the sufferings of the patient and limit the spread of the gangrenous process. The circulation can be improved by the intravenous injection of foreign proteins, radium chloride, sodium citrate, or Ringer's solution, combined with application to the extremities of hot-air baths and diathermy. The patient should also be instructed in the avoidance of minor traumata to the extremities, the protection of the toes, and treatment of any local condition which may deve

By periarterial sympathectomy the circulation be further improved and the pain further relieved. Buerger's disease pain dominates the situation more than does gangrene, and time that is free suffering is time gained. During this interval freedom a collateral circulation is gradually develo which will either render an amputation unnecessary or enable it to be done at a lower level. The operati of periarterial sympathectomy came into through the work of Leriche, who in 1913 publis an article on the removal and resection of the vascular nerves for the relief of painful syndromes arterial origin. Nerve-endings have been demonstrat by Woollard in the walls of the blood-vessels; from this point of origin the fibres, after a variable course of which the length is unknown, leave the vessel and join the neighbouring spinal nerve, but some remain to the artery and run along it throughout their whole course—in the case of the lower limb—right up to the lumbar ganglionated cord. Arteries are undoubtedly sensitive; this can be demonstrated both clinically and experimentally. They are sensitive not only to traumata but also to inflammation and the lessening of the blood-supply to their own walls. The object of periarterial sympathectomy is to divide the afferent and efferent sympathetic fibres and thereby abolish vaso-constrictor control over the whole of that portion of the vessel which is distal to the point of division, as well as to abolish the pain. In practically all cases the effects of the operation are an initial vaso-constriction, which is probably due to local trauma, followed very soon afterwards by vaso-dilatation, a rise in the temperature of the limb, and relief of pain. Periarterial sympathectomy relieves pain and on that ground alone justifies its performance in thrombo-angiitis obliterans.

The treatment formerly advised was early and high amputation, because of the patient's inability to endure pain but conservative measures, if carried out for long periods, will prevent the development of gangrene and most of the major amputations. There is a stage in this disease of acute or subacute vascular insufficiency, and if the patient can be carried past that stage without gangrene developing, sufficient collateral circulation will usually be established to leave the extremity adequately supplied with blood. In this series only one had a major amputation, and others had amputations of digits only. In thrombo-angiitis obliterans we are dealing with a process the striking feature of which is a collateral circulation, in contrast to arterio-sclerosis where the collateral blood-supply is poor. This further bears out the well-known fact that amputation below the knee is rarely satisfactory in arterio-sclerosis, whereas in thrombo-angiitis obliterans minor amputations are the rule and are successful in the great majority of instances.

Conclusions.

1. Thrombo-angiitis obliterans has a universal distribution; in all probability it is as common in the East as in the West.

2. In the East it appears to be of a milder type than in the West.

3. Major amputations are now rarely necessary; operative treatment, apart from sympathectomy, is almost entirely confined to removal of fingers and toes.

4. The relief from pain by periarterial sympathectomy is very striking; it gives time for a collateral circulation to develop.

5. Confusion exists in the diagnosis of localised vascular disease because of the failure on the part of the physician to examine for peripheral pulsation and to the erroneous idea that colour-changes in a limb must be due to Raynaud's disease or erythromyelalgia, whereas in many cases these changes are due to thrombo-angiitis obliterans.

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INFLUENZAL MENINGITIS.

WITH A REPORT OF TWO CASES.

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My justification for publishing these two cases of influenzal meningitis is not so much the rarity of this condition and the lack of recent reports on the subject as the fact that the second case recovered completely; from a survey of the literature this appears to be the third case only of recovery on record in this country.

The term "influenzal meningitis" is taken to mean a meningitis produced by Pfeiffer's bacillus or some allied bacillus of the influenza group; it does not include cases of meningitis which occur during epidemics of influenza. In point of fact, during the great influenza epidemics meningitis is quite exceptional. Levin,[1] in 816 cases of influenza in children, had only five cases of meningitis; of these none was due to the influenza bacillus. The majority of cases showed post mortem merely some hyperæmia of the cortex and meninges, while a few were frank cases of pneumococcal or streptococcal meningitis complicating influenza.

The influenza bacillus was described by Pfeiffer in 1892, and in the same year Pfuhl,[2] in Germany, described the first cases of meningitis due to this organism. Since then various authors have published isolated case reports, and in 1922 Rivers [3] was able to collect from the literature some 220 cases with a mortality-rate of 92 per cent. Thirteen cases—two of them in this country—had recovered completely, and an additional four cases had recovered partially, being left with the following sequelæ: (1) residual left facial paralysis and a left hemiplegia; (2) partial blindness; (3) partial blindness, bilateral papillœdema, and a paresis of the left oculomotor nerve; (4) complete nerve deafness. One of the cases reported below recovered completely and is perfectly well now, three months after the illness.

INCUBATION PERIOD AND AGE-INCIDENCE.

Davis [4] saw twins aged 5 days with signs of meningitis. One died on the ninth and one on the twelfth day, and at autopsy the first child had a definite influenzal meningitis; post-mortem examination was not allowed on the other. This would put the incubation period at not more than five days. So few cases have been seen that it is impossible to imagine the spread of the disease by contact, and there is at present no evidence of spread by carriers.

Influenzal meningitis is almost entirely a disease of infancy and early childhood. Of the 220 cases reported up to 1922, no less than 152 were under 2 years of age.

CLINICAL SYMPTOMS.

There are two main groups of cases: (a) influenzal meningitis; and (b) influenzal meningitis with joint involvement. Of the two, the former is, undoubtedly, the commoner.

(a) *Influenzal Meningitis.*—Good descriptions were given by Batten [5] in 1910 of this type of case. The onset is usually sudden, the child appearing previously to be in excellent health. He begins to vomit and on examination is found to have some stiffness of the neck, perhaps amounting to slight head retraction, and a moderate fever; Kernig's sign may be positive, but usually there is little rigidity and no paralysis, and the optic discs and pupils are normal. On lumbar puncture the cerebro-spinal fluid is under moderately increased pressure and is turbid, and microscopically shows pus cells and Pfeiffer's bacillus. The course is downhill, frank meningeal signs making their appearance later. The child gets progressively more drowsy and begins to twitch; finally, death occurs with fits or hyperpyrexia, usually within three weeks, though cases have been reported that survived as long as 60 days from the onset.

(*b*) *Influenzal Meningitis with Joint Involvement.*—Recently several cases of this condition, which is almost entirely limited to young babies, have been described by Dudgeon and Adams,[6] Nabarro and Stallman,[7] Kristensen and Christensen,[8] and Richardiére and Laplane.[9] Signs of a suppurative arthritis, usually of the knee or elbow, follow an attack of influenza, and aspiration of the joint reveals thick greenish pus containing Pfeiffer's bacillus. Meningeal signs appear in some cases whether aspiration is performed or not, and the child dies; in others incision and irrigation of the affected joint is followed by a perfect functional recovery and signs of meningitis never develop. In the majority of cases the arthritis is apparently primary; a few cases show at operation an actual influenzal osteomyelitis with secondary involvement of the joint (Zweig,[10] Leichentritt and Schober[11]). In Dudgeon and Adams's case Pfeiffer's bacillus was cultured from the joint, brain, and spleen post mortem, and, although they could not be cultured, bacilli could be seen in sections of the lung.

LABORATORY TESTS.

1. *Cerebro-spinal Fluid.*—This is usually cloudy and contains abundant polymorphonuclear cells. In some cases lymphocytes may be numerous—up to 30 or 40 per cent. Pfeiffer's bacillus can be seen in a stained fresh specimen as a minute pleomorphic Gram-negative organism, and pure cultures can generally be obtained on blood-agar. Some strains are hæmolytic and some are not. Several authors, as for instance Braxton Hicks,[12] have raised a doubt whether these organisms that are found in influenzal meningitis are true *B. influenzæ*. The true *B. influenzæ* has as two of its main characteristics that: (1) it is practically innocuous to animals, and (2) it is readily grown in suitable media. Organisms from cases of influenzal meningitis, however, are often very pathogenic to animals and in many cases are difficult to grow in pure culture. Probably the environment of the bacillus alters its virulence, for Anderson and Schultz,[13] in a case of influenzal meningitis, were able to isolate five different strains of influenza bacillus from the spinal fluid, blood, throat, nose, and nasopharynx respectively; immunological reactions showed no relations between the strains.

2. *The Blood.*—A blood count shows, as a rule, moderate leucocytosis. Blood cultures have been positive in many cases; Rivers,[3] in 23 cases, had eight positive results, and positive blood cultures have been reported by others (Wollstein,[14] Buchholz[15]).

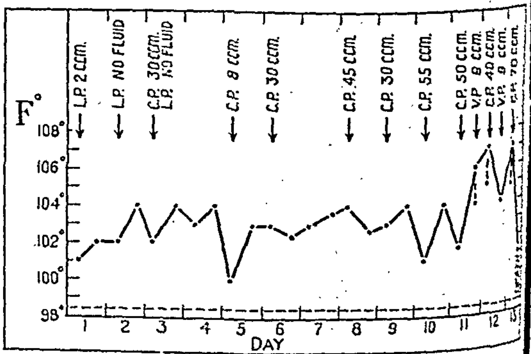
Case Reports.

CASE 1, a boy aged 1 year, was admitted on Jan. 9th, 1930. On Dec. 26th the baby suddenly started vomiting for no apparent reason and continued to vomit forcibly for the next three days. In addition he cried continuously and rolled his head from side to side now and again, but had no convulsions. Both parents were perfectly well; nobody in the house and nobody who had recently been with him had any obvious respiratory infection. The child was brought up to the hospital on Dec. 31st, but no signs of disease were discovered, and he was sent away with a diagnosis of teething, and given small doses of chloral. Two days later, on attending again, the mother said she thought the child was rather better, so the diagnosis of teething was regarded as certain and she was asked to bring him up again in a week's time. Next time, however, she thought the child was worse. On examination the general condition was bad; there was marked pallor and he really looked ill. There was definite bulging of the fontanelle, but no stiff neck and Kernig's sign was negative. He was admitted at once.

When I examined him he was pale, feverish, and obviously ill; there was no general body wasting—on the contrary, he was fat and well covered, although the tone of the muscles was much diminished. There was marked bulging of the fontanelle but no neck rigidity or Kernig's sign, and the cranial nerves, optic discs, and all reflexes were normal. There were no signs of disease in the abdomen, chest, or throat. On lumbar puncture only 2 c.cm. of thick turbid fluid were removed, not under increased pressure. Next day the pathologist reported that a direct smear from the fluid contained many pus cells and influenza bacilli; the bacilli, however, could not be cultured even on repeated attempts. (Cultures on blood agar were obtained later in the course of the disease.) The blood showed a modest leucocytosis; lumbar puncture was done again, but this time, even after two or three trials, no fluid could be obtained.

The child's general condition next day (Jan. 11th) was about the same. In view of the marked bulging and the fact that another lumbar puncture failed, cisternal punc was done and 30 c.cm. of turbid fluid under increased pres removed. Immediately after cisternal puncture fontanelle was less tense but within 12 hours it was bulgin as much as before. During the next week (Jan. 11t Jan. 18th) the general condition remained unaltered. Th were no more meningeal signs and no more vomiting. The fontanelle remained tense and bulging. Cisternal puncture was done on five days, removing 8 c.cm., 30 c.cm. 45 c.cm., 30 c.cm., and 55 c.cm. of turbid fluid, which became progressively clearer, with fewer pus cells and bacilli. At this stage it seemed possible that the child might recover. However, next day (Jan. 19th) he was obviously worse and beginning to get drowsy, but had no convulsions or twitchings. Right ventricular puncture was done, but as it removed only 9 c.cm. of fluid it was followed by cisternal puncture, removing 50 c.cm., but there was no improvement. Next day (Jan. 20th) left venticular puncture, removing 9 c.cm., and cisternal puncture (40 c.cm.) were done, and on Jan. 21st a further cisternal puncture, removing 70 c.cm. but coma increased and the child died. Apart from the use of the cerebro-spinal fluid treatment was purely symptomatic.

FIG. 1 (Case 1).



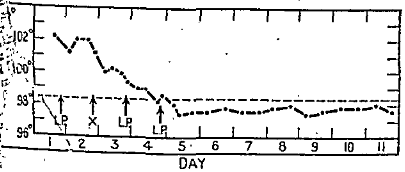
Temperature chart after admission to hospital. L.P. = lumbar puncture. C.P. = cisternal puncture. V.P. = ventricular puncture.

Post-mortem Examination.—The entire vertex of the brain was plastered over with a thick adherent layer of yellowish pus, obliterating the sulci and convolutions. The right ventricle contained pus, and the left ventricle contained pus with a large recent blood-clot; there was marked vascular engorgement of the brain. A careful dissection was made of the tissues at the back of the neck down to the dura; all the marks of the cisternal punctures could be seen, grouped together. On the internal surface of the dura round one or two of the puncture marks, there were small adherent blood-clots. The medulla, macroscopically, showed no evidence of trauma from the cisternal punctures. No pus was found in the mastoid or in the sphenoid, ethmoid, or maxillary sinuses, and cultures for the influenza bacilli were negative. Beyond some fatty degeneration in the liver, no changes were found in other organs; the lungs and tonsils were entirely normal. (Chart 1.)

Here we have a case of influenzal meningitis with no apparent previous influenza. At least 14 days elapsed before a definite diagnosis was made, and two more before drainage of the cerebro-spinal fluid was commenced. It was obvious at autopsy that the drainage of the cisterna magna had been entirely futile; we had merely removed supernatant fluid and left the pus adherent to the brain. It was interesting to see the result of repeated cisternal punctures; these were always carried out under slight ether anæsthesia and were easy enough to do, and the post-mortem examination demonstrated the accuracy of the procedure and its very slight traumatism.

CASE 2, a boy aged 5, was seen in consultation with Mr. E. Hesketh Roberts on May 1st, 1930. He was first een by Mr. Roberts on April 23rd, when there was an nflammatory swelling of one parotid, exactly like mumps f three days' duration. Two days later this had subsided. On May 1st at midday he began to vomit, after which he had o food. On sitting the boy up to auscultate the back of is chest it was noticed that he had a slight but definite tiff neck; Kernig's sign was doubtfully positive. No ther signs of disease were found in the central nervous ystem or other system; the urine was full of acetone. arge doses of alkalis were given, and also glucose.

FIG. 2 (Case 2).



Temperature chart from May 1st. L.P. = lumbar puncture. At (x) 5 c.cm. of antimeningococcal serum were given intraspinally and 25 c.cm. intravenously.

When seen by me on May 1st at 9 P.M., there was a efinite stiff neck, also inability to sit up owing to discomfort long the spine. All the reflexes, cranial nerves, and the ptic discs were normal. There were no signs of disease n the abdomen, chest, or throat; and no parotid swelling, nd both ear drums were normal. Lumbar puncture was done mmediately and 10 c.cm. of turbid fluid under slightly ncreased pressure were removed. A provisional diagnosis f meningococcal meningitis was made and next day, fter lumbar puncture (8 c.cm.), 5 c.cm. of antimeningococcal erum (Burroughs Wellcome) were given intraspinally nd 25 c.cm. (Mulford) intravenously. The clinical condi- on was at this time unchanged. Meanwhile the cerebro-pinal fluid had been examined and the pathologist reported arge numbers of polymorphonuclear cells and abundant nfluenza bacilli in a stained smear.

Next day (May 3rd) cultures were taken from the blood, asopharynx, and urine, but no influenza bacilli were found. umbar puncture was again performed and 12 c.cm. of uid were removed, definitely less turbid and containing wer pus cells and organisms. There was no headache nd the stiff neck was less marked. The following day, ay 4th, the boy was free from symptoms, but the cerebro-pinal fluid was still slightly turbid although no organisms ould now be seen on culture. The boy was kept in bed for wo weeks, but no further symptoms or signs of meningitis ccurred. The neck rigidity and Kernig's sign gradually isappeared in the first week, and the temperature remained ormal. He is now (August 1st) perfectly well. (Chart 2.)

The mortality of influenzal meningitis is 92 per cent. nd one wonders why this second child recovered. ost probably an important factor was the early raining of the infected cerebro-spinal fluid. In he first case the cerebro-spinal fluid had been infected or at least 15 days; any good result from cisternal r lumbar puncture was then hardly to be expected. review of the literature shows that few cases ave had lumbar puncture as early as ten hours fter the apparent onset of meningeal signs, as in Case 2; usually three or four days have elapsed since the onset. It is unlikely that the early administration of antimeningococcal serum aided in the recovery; in Richardière and Laplane's case,[9] aged 7, 20 c.cm. of antimeningococcal serum intraspinally and 10 c.cm. intramuscularly were given on the second day and continued daily for 16 days, but later a suppurative arthritis occurred, a positive blood culture was obtained, and the child died. It is obvious from the very slight symptoms shown by my second case that cases of influenzal meningitis may be quite frequent, undiagnosed, and recovering without treatment.

Treatment by Vaccine.

Most authors recommend repeated lumbar or cisternal punctures, possibly with the administration of hexamine, but it cannot be said that this line of treatment has met with any success. Recently, Marie and Pretet[16] described a case, age 1 year and 8 months, in which a cure followed the intraspinal administration of a vaccine prepared from a fatal case of influenzal meningitis.

> There was a history of one day's fever and vomiting; on admission the temperature was 104° F. and there was a marked stiff neck, opisthotonos, marked Kernig's sign, and hyperæsthesia. There were no other signs of disease in the central nervous system and all other systems were normal. Lumbar puncture showed cloudy fluid, containing many polymorphs and a few scanty bacilli; a culture on blood agar proved these to be Pfeiffer's bacilli. A hopeless prognosis was given and the child was left alone for 14 days, during which time the temperature was persistently between 102°–103°. The condition of the child remained unchanged. At this point 1 c.cm. of the anti-Pfeiffer vaccine prepared from a fatal case of influenzal meningitis was injected intraspinally, and next day for the first time the temperature dropped to normal. There were no symptoms of shock. During the next two days the child had no fever, and 1 c.cm. of vaccine was given daily subcutaneously; the next day, however, the child's temperature again rose, so three more injections were given intraspinally at daily intervals. The sign of meningitis became much less marked, and in a week the child appeared perfectly well. Ultimately there was complete recovery.

In Case 2 treatment on these lines had been considered, but the child was obviously improving consistently all the time, so no vaccine had to be given.

In conclusion, I should like to thank Mr. E. Hesketh Roberts for permission to publish his case; also Dr. R. Ralph, of St. John's Hospital, for the pathological investigations.

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THE NEW FREEMASONS' HOSPITAL.—At the annual meeting last week it was stated that the area available for the new hospital at Ravenscourt Park, Hammersmith, has been increased to five and a half acres and that the new building will hold 180 patients. The response to the appeal for £250,000 has, so far, been £218,000, but in consequence of the enlargement of the plans at least £350,000 will be wanted for the new building.

PLEURAL FLUIDS COMPLICATING INTRATHORACIC NEW GROWTHS.

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Accumulation of fluid in the pleural cavity is a common complication of intrathoracic tumour. Sometimes it occurs late in the course of the disease when the diagnosis has become obvious; at other times it arises in the early stages covering up the lung lesion and obscuring the diagnosis. It frequently recurs after paracentesis, but occasionally it may clear up presumably as a result of occlusion of the pleural cavity by growth, and it may then be a confusing sign difficult to harmonise with the clinical picture.

Autopsy Records.

In 131 autopsies on intrathoracic malignant disease at Victoria Park between the years 1911 and 1930, fluid was found in 56 instances. The following types of fluid were encountered.

SEROUS FLUIDS.

Sterile Effusions.—Sixteen sterile clear fluids were found in cases in which no naked-eye lesions were noted in the pleura itself. Of these, nine were on the same side as the pulmonary growth (six on the right side and three on the left) and four were on the side opposite to that of the growth, whilst three were bilateral.

Effusions with Secondary Deposits in the Pleura.—There were ten examples, of which four were on the right side and six were on the left.

Localised Effusions.—Only one instance of a localised collection of fluid occurred. It was a small serous effusion in the region of the fifth, sixth, and seventh costochondral junctions, the rest of the pleural sac being closed with adhesions. There were secondary deposits in the other pleural sac, but none was found on the same side as the fluid.

Clear Effusions with Secondary Bronchiectasis.—Three cases were noted of a malignant growth giving rise to secondary bronchiectasis and complicated by a serous exudate into the pleural sac.

Clear Fluids Secondarily Infected.—There were three cases of serous effusions in which bacteriological examinations during life showed organisms on culture. The first showed streptococci and fusiform bacilli, and it was evident at the autopsy that the exudate was the result of an underlying terminal gangrene of the lung. In the second and third cases the organisms were probably staphylococcal contaminations.

Effusions containing Tubercle Bacilli.—It is not very uncommon to find pulmonary tuberculosis and malignant disease in the same lung, but it is less common to find a serous effusion containing tubercle bacilli as a complication of new growth. Two cases were noted in the series, one in which the patient had in the right lower lobe both a squamous-celled carcinoma and a cavity suggestive of tuberculosis. The left pleural cavity contained half a pint of turbid fluid in which tubercle bacilli had been demonstrated during life. The other case was also one of carcinoma of the right lower lobe with a tuberculous cavity above. A clear effusion containing tubercle bacilli was removed by exploration on two occasions during life. At the autopsy the fluid was found to have been absorbed and become replaced by adhesions and new growth.

Effusions Subsequently Replaced by Adhesions and Growth.—In addition to the case quoted above there was another instance of a patient who had had, in the earlier stages of the illness, an exudate into the left pleural sac which was drained by paracentesis. Three subsequent explorations failed to find fluid. At the autopsy the sac was found to be adherent, and a mediastinal tumour to have invaded the pleura. This finding seems to be worth recording, because it is sometimes stated that the absorption of a pleural effusion negatives a diagnosis of new growth. Another instance of this occurrence is recorded in the group of effusions with secondary deposits in the pleura, making three in all in this series.

Effusions Possibly Related to Treatment.—Two cases occurred in which effusion was associated with (*a*) artificial pneumothorax, and (*b*) the insertion of radon needles. The first was a case of effusion found, at autopsy, five days after the insertion of radon needles, and the second an effusion after combined pneumothorax and radon treatment. The occurrence of these effusions may, however, be pure coincidence.

PURULENT FLUIDS.

Empyema.—Eleven cases of empyema occurred in this series. In five there was secondary bronchiectasis in the malignant lung. A sixth was an instance of interlobar empyema, and a seventh an empyema secondary to a subphrenic abscess. The empyema in this case was divided into two separate cavities by means of a sheet of adhesions.

Pyopneumothorax.—Two cases of pyopneumothorax were found. The first was a patient who had been admitted with a hydropneumothorax which subsequently turned to streptococcal pus and was drained by open operation. The pyopneumothorax was confined to the upper half of the right sac and the collapsed upper lobe showed no naked-eye growth. A mediastinal growth radiated out in the right lower and middle lobes. It was not clear how the pneumothorax had been produced. The second was a case of carcinoma of the right bronchus with some emphysematous bullæ in the left upper lobe, one or other of which had presumably ruptured, giving rise to a pyopneumothorax containing *Bacillus influenzæ*.

Pus from Bronchiectatic Cavities.—Bronchiectasis is a common complication of malignant disease of the lung, especially in cases in which there is involvement of the bronchus with growth. If the bronchiectatic cavity be of considerable size the exploring needle may enter it and withdraw pus, which gives rise to the belief that an empyema is present. In this series there were five such instances. In four of them a rib resection operation had been done and the wound had failed to heal.

Summary and Discussion.

(1) In this series there were 56 cases (43 per cent.) of pleural fluids of various types occurring in a total of 131 intrathoracic tumours. (2) Thirty-eight (68 per cent.) were clear effusions, and 18 (32 per cent.) were purulent—approximately 3 to 1. At the post-mortem examination several of the serous fluids were bloodstained, but no case of hæmothorax was found. (3) Of the 38 serous fluids 10 occurred with secondary deposits in the pleura, and probably resulted from these deposits. Four appeared to result from underlying sepsis (three bronchiectasis and one gangrene of lung). The remainder may possibly be accounted for in one of two ways—viz., either there were minute subpleural deposits of growth not visible to the naked eye, or pressure of the growth in the mediast

caused interference with lymphatic drainage or venous return. (4) Two serous effusions had contained tubercle bacilli during life. Pulmonary tuberculosis and intrathoracic new growth occurring in the same lung are not uncommon. (5) Three instances occurred of serous effusions which became absorbed with advancing new growth occluding the pleural sac. At first sight it may seem unlikely that absorption of fluid can take place through a visceral pleura studded with growth, but it is probable that the absorption is effected through the parietal pleura. (6) It is rather surprising that with the many possibilities of venous and lymphatic obstruction secondary infection of serous fluids was not commoner. (7) Of the 18 purulent fluids five consisted of pus from bronchiectatic cavities, two were instances of pyopneumothorax, and 11 were empyemata (five resulting from underlying sepsis in the lung, and one following subphrenic abscess). The danger of confusing a bronchiectatic cavity with empyema in these cases is evidently considerable.

I am indebted to the medical staff of the Victoria Park Hospital for the clinical notes quoted in this paper, and to Dr. D. S. Page for some of the post-mortem examinations.

CLINICAL AND LABORATORY NOTES

PURPURA HÆMORRHAGICA COMPLICATING SCARLET FEVER.

RECOVERY AFTER THE USE OF LIVER EXTRACT.

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Hæmorrhagic complications during scarlet fever are fortunately very rare. References to them in the current medical text-books are brief or absent, and are often coupled with the statement that some of the instances recorded may have been cases of purpura variolosa (hæmorrhagic small-pox). Clinicians who have encountered such cases are impressed by their malignant and rapidly lethal character.

In most of the few cases which are recorded ecchymoses have developed on the extremities without implication of the mucous membranes, and death has ensued in a day or two (purpura fulminans). In a few free bleeding from the mucous membranes, as well as into the skin, has occurred (purpura hæmorrhagica). The case now recorded is of the latter type.

A lad of 10 years was admitted to the London Fever Hospital on the thirteenth day of scarlet fever owing to the supervention of purpuric complications. The disease had been uneventful until the tenth day, and the lad had been nursed at home. Corroborative evidence of the nature of his illness is afforded by the fact that his mother and sister contracted the disease shortly afterwards. No family history of purpura or bleeding could be obtained. Petechiæ had been noticed on the abdomen on the tenth day of disease, and on the next day had spread all over the body, including the buccal mucous membrane. On the twelfth day epistaxis was profuse and the urine bloody. Red blood was vomited and, later, melæna and abdominal colic were observed.

On admission the boy was pallid and very restless. The lips were cyanosed. The pulse was rapid (130) and small, the respirations hurried (30), and the temperature but moderately raised (99·4°). A profuse purpuric eruption covered the trunk, limbs, and face. The lesions were of all sizes, some petechial but most larger, a few attaining a diameter of nearly 3 cm. On the right upper arm was a large bruise surrounding a needle puncture. Most of the purpuric spots were dusky purple, some were brighter, and evidently more recent. A few small hæmorrhagic lesions were present on the mucous membrane of the cheeks and tongue. Blood oozed from the nose and posterior nasopharynx. Vomiting, although frequent earlier in the day, had ceased. Melæna was observed, and the urine passed appeared to consist almost entirely of bright blood. The spleen was indistinctly felt on deep inspiration. The fauces were free from obvious inflammation. Neither the submandibular nor other lymph glands were enlarged, and no lesions were detected in the lungs or heart. Hæmoplastin and collosol calcium had been administered before the boy was brought to hospital.

The condition was so critical on the evening of admission that the advisability of immediate blood transfusion was considered, but this was postponed while a trial was made of the free administration of liver extract. This was obtained at once, and a quantity equivalent to a pound a day was administered and continued for a fortnight; afterwards the quantity was reduced to half this amount for five days more. Within 12 hours there was an obvious amelioration of the hæmorrhagic symptoms. The epistaxis slowly ceased, and after 48 hours there was no hæmaturia. A few fresh purpuric spots appeared for one day, and then no more. The purpuric rash and the ecchymoses slowly faded. There was no fever after the night of admission, and the pulse- and respiration-rates slowly fell to normal. After an isolation of six weeks from the commencement of the scarlet fever the boy was discharged, apparently in perfect health.

Date in 1930.	Red cells (millions).	Hb.	C.I.	Platelets.	White cells.	Polymorphs.	Lymphocytes.	Monocytes.	Myelocytes.	Eosinophils.	Basophils.
		%				%	%	%	%	%	%
Sept. 18..	3,900	80	1	—	80,400	88	9·5*	—	0·5	—	—
„ 19..	3,350	65	1	0 in 4000 cells.	39,800	81·5	14	2	2·5	—	—
„ 26..	2,960	65	1·1	47,300	17,800	49	38	5	—	8	†
Oct. 3..	3,680	80	1·1	93,840	8,600	34	56	6	—	4	†
„ 22..	4,032	80	1	380,800	13,500	45	43	2	—	8	2

* 3 per cent. large and 6·5 per cent. small; also hyaline cells 2 per cent.

† Punctate basophilia observed.

Successive blood counts are shown in the Table. The first count was made by Dr. H. L. Tidy, who saw the boy before admission. The subsequent examinations were by Dr. A. G. Signy, of the Hospital for Sick Children, Great Ormond-street.

The most striking features of the early counts are the heavy polynuclear leucocytosis, the thrombocytopenia, and the absence of eosinophil cells. In the short time which elapsed between the first and the second blood count the number of white cells was halved, but the polynuclear excess persisted. Under treatment the platelets showed an early and rapid increase, the eosinophils reappeared, and the polynuclears gradually diminished in numbers.

COMMENTARY.

There is now plenty of evidence that the administration of liver causes a rapid and progressive increase in the number of blood platelets; indeed it appears to be the most efficient means in this direction which we possess, superior even in its results to blood transfusion. The absence of eosinophil cells in scarlet fever is said to be a characteristic of fatal cases; ordinarily the disease is unique among other acute infective fevers in that it shows an increasing eosinophilia after the onset.

The polymorphonuclear leucocytosis, which reached 88 per cent., is probably of great significance. The leucocytosis of scarlet fever is of polymorphonuclear type but should, in uncomplicated cases, reach its maximum during the first week of illness. Even in anginose cases 50,000 would be a very high figure for the white cells. In this case, well in the second week, this number was greatly exceeded, and this excess is evidently connected with the purpuric state. Dr. Joseph Bamforth, of St. Thomas's Hospital, allows us to state that he has a paper in course of publication on the purpura produced by arsenobenzol poisoning, in which he adduces evidence that marked leucopenia and polymorphonuclear deficiency in this type of purpura are of fatal prognostic import, whereas leucocytosis and polymorphonuclear excess point to recovery.

The basis of purpura fulminans is held to be a capillary toxicosis combined with platelet deficiency, the latter being due to a myelotoxicosis. This combination is the underlying condition in purpura variolosa (hæmorrhagic small-pox), where in addition a marked leucopenia is also in evidence.

It is possible that some distinction should be drawn between cases of scarlet fever in which hæmorrhages accompany and transform the scarlatinal eruption and these, like the one now described, in which purpura develops some 14 to 16 days after the commencement of the disease. At this stage two factors are supposed to interact. The capillaries of the skin, and probably also of the kidney and mucous membranes, have made but little recovery from the damage they have received from the infection, but the decisive factor is held to be the onset of an anaphylactic phase.

E. Frank argues for an accompanying platelet deficiency in these cases, but admits that positive evidence is lacking. This evidence our case seems to supply. The distinction usually drawn between purpura limited to cutaneous structures and purpura involving mucous membranes alone or in addition to the skin, may not after all be a fundamental one, since transitional cases are recorded.

ESTIMATION OF UREA IN URINE.

BY DUNCAN LEYS, M.B. OXF., M.R.C.P. LOND.,
ASSISTANT TO THE MEDICAL UNIT, WELSH NATIONAL SCHOOL OF MEDICINE, CARDIFF.

THE commonly used methods of estimating urea in urine are the hypobromite and the urease. The first, which is simple and rapid, has been discarded for scientific work on the grounds of inaccuracy since, while it gives quantitative results with pure solutions of urea, other nitrogenous bodies in the urine contribute to the nitrogen evolved. The continued use of the hypobromite method in clinical work for the application of the MacLean-de Wesselow urea-concentration test makes this a matter of some importance. The fact that the usual calculation is based on an erroneous chemical equation which assumes that all the urea nitrogen is converted to gaseous nitrogen is of little importance: the deficiency due to cyanate formation, &c., is very small—e.g., an estimate calculated as 2·9 per cent. urea should be 3·0 per cent. if all the urea nitrogen were measured. Ammonia is the only important source of non-urea nitrogen: it has two origins (*a*) bacterial decomposition of urea, and (*b*) ammonium salts of mineral and organic acids. The total nitrogen evolved by the hypobromite is unaffected by factor (*a*) except in so far as some of the ammonia may evaporate and decrease the total estimate, giving a worse picture of kidney function than the true one. Factor (*b*) is chiefly of importance when excess of ammonia is excreted in combination with organic acids in the "acidosis" of diabetes, since the normal excretion of 0·5 to 1·0 g. per day (about 0·075 per cent.) may then rise to 4 or 5 g. (0·5 per cent.). When this is associated with poor renal function, the error may amount to almost 100 per cent. As illustration, the following figures were obtained by increasing the ammonia content of a urine by added ammonium chloride.

Original estimation by urease method 0·85 per cent. (ammonia 0·01 per cent.).

	Nitrogen evolved.	Equivalent as urea per cent.
Original estimation by hypobromite	12·5 c.cm.	0·83
Added salt equivalent to 0·3 per cent. ammonia	17·5 „	1·16
Added salt equivalent to 0·6 per cent. ammonia	21·4 „	1·[illegible]

The error, if remembered, can be allowed for exc[illegible] in the rare conjunction of acidosis and bacilluria. The simplest procedure is to estimate the amm[illegible] and amino-acids by the formol method, if there is suspicion of acidosis—in practice, if there is a positive nitroprusside test—whenever an estimate of ur[illegible] excretion is needed. The estimate takes a few mi[illegible] only. The ammonia nitrogen is quantitative, released by the hypobromite.[1] 1·0 g. [illegible] gives 14/17 g. nitrogen, or 11·2/17 litres nitrogen, [illegible] 658 c.cm. If 4 c.cm. urine are used for the estimation, 2·6 c.cm. nitrogen should be subtrac[illegible] from the result for every 0·1 per cent. ammonia present. For example, a diabetic urine (sugar 4·5 per cent., positive nitroprusside reaction) gave:—

Urea by hypobromite method: nitrogen evolved 30 c.cm.; apparent urea 2·0 per cent.

Ammonia by formalin method 0·32 per cent. (By aeration 0·33 per cent.)

Subtract 3·2 × 2·6 c.cm. nitrogen for ammonia, or 8·3 c.cm.

True urea figure 21·7 c.cm. nitrogen, or 1·44 per cent. urea.

In this case an apparently normal urea figure is shown to be definitely low.

SUMMARY.

It is impossible to estimate urea excretion by hypobromite method when there is a combination of bacilluria and "acidosis." Bacilluria alone does not appreciably affect the result. Excess ammonia in the urine in "acidosis" should be allowed for by estimating by the formalin method, and subtracting 2·6 c.cm. nitrogen for every 0·1 per cent. ammonia found, whenever urea excretion is estimated in patients whose urine gives a positive nitroprusside reaction.

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[1] The error is, for practical purposes, negligible—e.g., 4 c.cm. of a solution of ammonium chloride representing 0·3 per cent. ammonia gave 8·0 c.cm. nitrogen, when 8·3 are demanded by the calculation.

LEICESTER ROYAL INFIRMARY.—Last year this hospital treated 8406 in-patients, an increase of 100; in 1900 the number was 2799. The average cost of each in-patient was £10. Out-patient and accident [illegible] numbered 33,738. The expenditure of £97,322 left a deficit of £10,558.

MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON.

At a meeting of this Society held on Jan. 26th, r. R. A. Young presided, and a discussion on the

Medical and Surgical Uses of Diathermy

was opened by Dr. E. P. Cumberbatch whose remarks re given in full in the front part of this issue.

Mr. W. Sampson Handley said that surgeons in his country owed a debt of gratitude to Dr. Cumberatch for his persistent advocacy of a method which ad proved so useful, especially in cancer surgery. iathermy sterilised the tissues from bacteria to a onsiderable depth, and this was of importance in perations on cancer of the cervix and rectum where condary infection around the growth prejudiced o ultimate results. Over large fields of surgery the athermy needle was, in his experience, superior the knife, and he believed that in a few years a rge proportion of surgical operations would be done y diathermy. He had used both the cutting current d the needle alone; those who had not previously en the method would be astonished at the way in hich the tissues faded away before the approach of the edle without pressure from the hand of the operator. It was, he said, about ten years ago that he began use diathermy in surgery, at first for inoperable ases of breast cancer with an ulcerated and septic urface; he had employed the needle with the view f clearing up an unpleasant mess, and had been urprised at the way in which wounds healed, whose dges could not be brought together. In a few days e raw area was red with healthy-looking granulaons; healing was rapid and painless. Thus he came use the method for ordinary operable cases of reast cancer, handling the needle just as he had andled the knife, but not in the axilla for fear of uncturing large vessels. Since 1927 he had been sing diathermy practically exclusively for operating n breast cancer. Provided the machine was ficient—a very important consideration—primary nion was obtained, and the wound could be sutured s completely as after a cutting operation. The ethod was slightly quicker than the knife. The urface left should be uncharred, and for this reason was best to cut the skin with the ordinary knife. he diathermy knife killed all the carcinoma cells ing in the plane traversed by the needle, and in at way the risk of implanting cancer cells in fresh reas was obviated.

An important gain in breast surgery was in preventing chill. In removing a breast by the knife one ifficulty was to keep the flaps warm, constant lays of hot swabs being necessary to prevent the hilling which would lead to ulceration and perhaps oughing. With diathermy the heat sufficed to iminate any such anxiety. Bleeding, too, was much essened, and fewer vessels had to be tied. It was, owever, better to tie a vessel than to apply a rminal persistently to the bleeding point; if pplied to vessels near the pleura, pleurisy might esult. Following the diathermy method there was remarkable absence of shock, an observation which e commended to the attention of the physiologist. He was convinced that the stimulus of dividing a erve was less after diathermy than after the knife; his might account for the comparative freedom from hock.

Surgical diathermy had certain drawbacks of its own. Ether could not be used with the method, though that was immaterial, as other anæsthetics were available. At the end of seven days the skin edges might become red, as if they were passing through a phase of lowered resistance to the patient's own staphylococci. This could be counteracted by spraying daily with antistaphylococcus virus. The most serious danger was of over-heating a long thin flap which had been raised up by the needle, as this might thrombose the nourishing vessels; care must be exercised in the strength of current used. During the past three years he had been endeavouring to extend the scope of diathermy to operations within the abdomen. For gastrectomy it possessed many technical advantages; shock was to a large extent eliminated, and there was an absence of the usual rapid pulse and collapse. He used diathermy for dividing the stomach, duodenum, and omentum, after applying clamps in the usual way. He showed a stomach removed in this way five days previously, free of any charring at the edges; the chart indicated a return to the pre-operation pulse-rate within five days. No transfusion was necessary; the patient just had free supplies of saline. The diathermy needle must not, he said, be allowed to touch the bowel, as perforation would then ensue, either immediately or in a few days. He used a strand cut from the omentum to strengthen the line of suture in the stomach.

DISCUSSION.

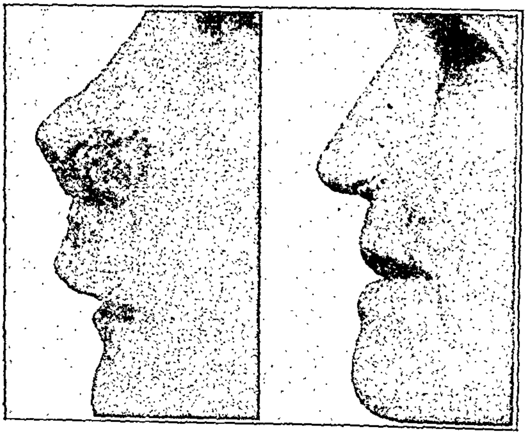
Dr. F. D. Howitt said there were three main fields for diathermy. The first was the surgical, in which the current was concentrated at the active electrode in order to produce destruction at that point. Secondly, medical diathermy, used when the production of heat was required internally, the electrodes being placed accordingly. Thirdly, its employment when sufficient heat was required to be generated to sterilise tissues in cases of bacterial invasion, without causing destruction of the tissues themselves. It had long been a matter of debate as to whether diathermy had any effect other than that of producing heat. Dr. Cumberbatch and others considered that the raising of temperature was the only effect, while such authorities as Nagelschmidt believed there was in addition a definite electrical effect. The speaker had tried to settle the point by putting bacteria in capsules and applying the diathermy current, when it was found that the bacteria died at the same temperature as they did in an incubator. He had been pleased with the results of diathermy in cervical erosion and surgical sepsis. It was valuable for anal fistula and spasm, also for the inflammation which sometimes ensued after removal of hæmorrhoids. Anal spasm caused anæmia of the tissues, and this prevented the mucous membrane from healing. After a special electrode had been kept in the anus a few minutes the anus relaxed, and progressively larger electrodes could be inserted. Fissure of the anus could also be treated in the same way. Another condition amenable to diathermy was cyclitis. Ophthalmologists told him that the main indication in this condition was the application of heat. When heat was applied by the ordinary means of conduction and radiation to a vascular organ like the eye it was quickly carried away by the superficial circulation. The eye was of an awkward shape for the placing of a pad, but by using an electrode with a metal base, shaped like an ordinary eye-cup and filled with normal saline, diathermy could be applied so that the concentrated heat reached the interior of the orbit. Mr. O. G. Morgan had treated thus at Guy's Hospital 14 cases of cyclitis, three of which were acute, and some of them followed cataract extraction; nearly all did well in spite of age. The treatment resulted in a diminution of ciliary congestion and of pain in and around the eye, and in disappearance of keratitis punctata. Usually 10 to 12 sittings were necessary.

Mr. C. **Hamblen Thomas** spoke of the application of diathermy to ear diseases; in older conditions the relief was only temporary, as judged by the hearing. For tonsils he thought it would be difficult to sterilise a deep-seated infection at the base near the capsule. When removed a tonsil was often found to have a small abscess at its base.

Mr. W. **Ibbotson** spoke of a case in which he removed, by diathermy, a carcinoma of the pharynx; the rapid healing afterwards surprised him.

Mr. **Mortimer Woolf** said that for two years he had used diathermy in all operations for carcinoma of the breast; shock was less, operation was quicker; it was miraculous how the tissues disappeared on the approach of the needle. Recently he had been dividing the skin with a very fine diathermy needle, using a rather stronger current. If done at the right speed it was easy to obviate charring on the one hand, or scratching on the other. He now used the knife only in the region of the axillary vein, for fear of producing a clot which might extend into the main vein.

Mr. **Philip Turner** referred to two cases which he had treated by diathermy 17 and 18 years previously and were now well and showing no signs of disease. One was that of a woman who had malignant ulceration of the lip and nose, whom he showed to the Clinical Section of the Royal Society of Medicine at the time. The other was a patient with advanced tuberculous glands and broken-down sinuses, the condition persisting year after year, and there were several calcareous masses in the neck. These end-results were interesting in the light of the much greater use of diathermy at the present day for various conditions.



REPLY.

Dr. **Cumberbatch**, after saying he thought Mr. Handley must have been the first in this country to use the cutting current in abdominal surgery, raised the question of nomenclature. The term "diathermy knife" had been used, but it was, he thought, confusing because one could use a scalpel as an active electrode, first coagulating the tissue around it, and then cutting through it; that was the diatherm knife, but the reference was to a needle and th cutting current. The term "cutting current" w suitably applied to the current itself. For the ele trode which divides the tissue the term "acusector" had been suggested by Howard Kelly, while Wyet the protagonist of cutting current surgery in th United States, preferred the term "endotherm knife." A special machine had been constructed in America under the direction of Harvey Cushing and Bovie for producing various kinds of cutting curre Whereas the same current would cut all kinds tissue, such as skin, fat, muscle, &c., it must modified for each tissue if healing by primary un was to occur. The English machines did not, thought, give precisely the same kind of curren the American; they gave a current which c coagulate en masse as well as cut. It was uncer whether a coagulating current was equally sui for cutting. The current from a machine in Ho Kelly's clinic, which he had tried, cut beautifully did not coagulate; for the latter purpose the cu from an adjoining part of the machine was Dr. Howitt had spoken of the method of actio oscillatory currents. For himself, he felt sure th it was the heat that was responsible for the th peutic effects, though possibly the currents m have in addition some other action on chemical p cesses. Prof. d'Arsonval had found that the ap cation of high-frequency currents to diphther toxin caused a reduction of the toxicity, even wh precautions were taken to prevent rise of tempe ture. In reference to Mr. Thomas's remarks on th application of diathermy in otology, he had so trea a few cases of catarrhal deafness but without strik results. The action of the current in diseases of th eye and ear was simply to raise the temperature the interior; where there was inflammation th effect of the heat was to aid the resolution the inflammation. Another effect was to increase th blood-supply. Vaso-dilatation had been talked but it was, he thought, more correct to attrib the increased blood-supply to acceleration of th circulation. At a temperature even as high as 111° F there was surprisingly little erythema, but diatherm increased the rate of flow of the blood, perhaps b diminishing its viscosity.

As to the use of diathermy in the throat it ha been claimed possible to destroy the entire tonsil one sitting; on the other hand, Dr. Dan McKenz recommended piecemeal destruction, the operatio being repeated at intervals of a week or more un no lymphoid tissue remained. In the phary massive malignant growths could be coagulated diathermy, leaving the patients in so little discomf that they would be able on the next day to sit up bed or even walk about. Mr. Woolf had spoken the Anderson method of stopping the hæmorrhag from the larger vessels which took place when th were cut. Their divided ends were picked up wi forceps and the current directed along the meta it heated the ends of the vessels until they coagulate The sealed ends, coagulated in this way, remain in the wound which healed by first intention. B were these vessels permanently sealed? Mr. Dun had told him of a case in which hæmorrhage ha occurred from one of these supposedly sealed vess The long duration of freedom from return in M Turner's cases constituted, he thought, a record. case of ulcer of the lip, clinically malignant, trea by diathermy was free from recurrence, he said, fi years afterwards; but he had no microscopic evide as to its true nature.

REVIEWS AND NOTICES OF BOOKS

lood: A Study in General Physiology.

By L. J. HENDERSON. London: Humphrey Milford, Oxford University Press. 1930. Pp. 390. With 229 figures. 23*s.*

ONE of the most important problems in physiology the mechanism by which oxygen is brought to the sues, and carbon dioxide carried away, without necessary disturbance of the internal environment the body. The conditions governing the combina- n of oxygen with hæmoglobin, and the influence of bon dioxide and electrolytes on the hæmoglobin-yhæmoglobin equilibria have long been studied, l in recent years our knowledge has been extended l clarified largely by the work of Barcroft and the mbridge School. The method whereby the acid-e balance of the body fluids is maintained has engaged the attention of workers all over the rld, but it is only within comparatively recent es that the work of Van Slyke, and of Henderson, their collaborators has led to the consideration the inter-relationship of changes involving the nerous electrolytes of the blood. The importance such mechanism as the "chloride shift" in the fering action of the blood—as opposed to that of sma—has thus been made clear. A useful intro-tion to the subject was afforded by the lectures livered in London in 1925 by Prof. Henderson, d subsequently published by the University of ndon Press. In this work Prof. Henderson ats in much greater detail the physico-chemical uilibria affecting the distribution of various ctrolytes between cells and plasma of arterial and nous blood. He also describes clearly the mech-isms which are adopted by the body at work and disease, in the attempt to keep constant the internal vironment, and particularly the hydrogen-ion centration. Workers in general physiology who preciated the lectures will welcome a book which es much more fully the results of investigations the acid-base balance of the blood, not only in alth but also in disease.

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ld in Relation to Skin Diseases.

By H. HAXTHAUSEN, M.D., Physician to the Finsen Light Institute, Copenhagen. London: William Heinemann, Ltd. 1930. Pp. 163. 16*s.*

THE mode of action of a universal stimulus such as d on the normal functions of the skin presents portant problems both to the physiologist and the rmatologist, and when that factor is studied in its ation to cutaneous disease, we are provided with new angle of vision. Dr. Haxthausen argues that stimulus of cold, owing to the modern vagaries feminine fashions, is a factor of increasing portance in dermatology and justifies a collective rvey of the subject. The first 50 pages of the book concerned with the normal responses of the taneous vessels to temperatures varying between C. and 0–6° C. (e.g., solid CO_2 treatment), d include a summary of the classical physiological periments of Krogh, Ebbecke, and Sir T. Lewis the normal reactions of the cutaneous circulation. ostbite and trench foot are next considered, and en follows a detailed essay on the pathology of ilblains and that relatively modern and by no means re condition termed erythrocyanosis crurum ellaris. These, together with acrocyanosis, erythema pernio papulosum, and senile chilblains, are all grouped under the collective title, Perniones. A large section is devoted to their treatment, and we are then led to a consideration of the influence of perniosis in the development and distribution of tuberculosis cutis—e.g., Bazin's disease, and lupus vulgaris, eczema, rosacea, psoriasis and lupus erythematosus, and the trichophytides.

A more scholarly and lucid exposition could hardly have been devised, and we are indebted for an excellent English translation, which cannot fall far short of the original, to Dr. W. Jenkins Oliver, late dermatologist of the Prince of Wales's Hospital, Tottenham. The general arrangement and the many typical illustrations of actual cases are of a high standard.

Handbuch der Kindertuberkulose.

Vol. I. By Prof. Dr. ST. ENGEL and Prof. Dr. CL. PIRQUET. Leipzig: Georg Thieme. 1930. Pp. 886. M.125.

THIS text-book shows keen industry and covers a lot of ground. A preliminary section deals with the different strains of tubercle bacillus, and a final section with chronic pulmonary disease of a non-specific indeterminate nature; between these two extremes is a vast territory which can be briefly indicated.

The volume is divided into four main parts: (*a*) general pathology and pathological anatomy; (*b*) clinical; (*c*) tuberculosis of the different organs; and (*d*) paratuberculosis, including the differential diagnosis of the more important diseases which are regarded as not specifically tuberculosis. The editors are to be congratulated on a choice of their many collaborators from various countries. Prof. Lydia Rabinowitsch-Kempner and Dr. A. Stanley Griffith write on bacteriology, Prof. Anton Ghon, Dr. Herbert Kudlich and others on the primary complex and all those cognate matters which we have come to associate with this condition. Prof. Bruno Lange deals with infection, and brings up to date his well-known contributions to the study of droplet and dust infection. Dr. Wilhelm Weinberg deals with epidemiological work on tuberculosis and the family, and collects a quantity of statistical material on a subject which is rather scattered in the literature. The long section of pathological anatomy is in the hands of Prof. Hermann Beitzke and Dr. W. Pagel, while under the section of general pathology are brought together subjects which have not always been well correlated in the past. These include immunology (Prof. Julius Bauer), reinfection (Dr. Franz Redeker), and clinical stages of tuberculosis (Dr. Franz Hamburger). Prof. Stefan Engel and Dr. Selma Segall have written a section on various questions relating to the age and onset of tuberculosis in childhood, including morbidity and mortality statistics and tuberculin tests.

In the clinical part of the book nearly 100 pages are devoted to the primary complex in its various aspects, apart from much material on the subject in other parts of the book, contributed by Dr. Herbert Koch, Dr. Berthold Epstein, Prof. Engel, and Dr. Richard Priesel. Another large section also deals with the portals of entry from various points of view. The usual continental method of studying tuberculosis in three stages, primary, secondary, and tertiary, is adopted. Under the term secondary stage is included bacillæmia, secondary tuberculosis of the lung, perifocal inflammation, and tuberculous meningitis and miliary tuberculosis. In the third stage is included late pulmonary tuberculosis with its various complications as seen in older children. This stage is described by Dr. Otto Wiese at considerable length and forms one of the most interesting portions of the book. The section on tuberculosis of the different organs includes accounts of tuberculosis of the skin (Dr. Carl Leiner and Dr. Felix Basch), of the pleura and peritoneum (Prof. E. Mayerhofer), of the genito-urinary tract (Dr. Richard Wagner), of the eye (Prof. Josef Igersheimer), and of the ear (Dr. Rudolf Leidler). Bone and joint tuberculosis together with lymph gland tuberculosis is also included in this section, and has been ably condensed into some 50 to 60 pages by Dr. Priesel. In the final section on paratuberculosis Dr. Arvid Wallgren discusses erythema nodosum, phlyctenular conjunctivitis, acute serous pleurisy, and tuberculous rheumatism; Dr. Ernst Moro and Dr. Walter Keller deal with scrofulosis, Dr. Wagner with various types of lymphadenoma, and Dr. Hans Vogt with chronic non-specific lung disease.

We believe that English readers will be particularly glad to have available the large mass of material to be found in the book on the primary complex and its implications in childhood tuberculosis.

The work is plentifully illustrated, and each section has a bibliography. There is no subject index; presumably this is intended to go into a subsequent volume. Every student of pædiatrics would be glad to possess this authoritative book of reference.

Ethnos or the Problem of Race.

By Sir Arthur Keith. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1931. Pp. 92. 2*s*. 6*d*.

In this recent addition to the To-day and To-morrow Series, Sir Arthur Keith makes the departure, for an anthropologist, of writing politically. He has done this deliberately, finding it impossible to write about human races without touching on matters which concern statesmen just as much as anthropologists, and hoping to induce politically minded people to study racial problems from the anthropological aspect. He makes out a good case indeed for the serious consideration of these problems by statesmen; already they are obtruded upon the attention of The League of Nations, which might be considered, at any rate in design, as an international committee of statesmen. A large portion of the book is taken up with the close consideration of the views of Huxley on the classification of races, when Sir Arthur says that, while from long experience he has learned the danger of disagreeing with any of Huxley's verdicts, he finds an evolutionary conception to be more elastic than Huxley's methods of classification.

The primary purpose of the book is to give a new interpretation of national unrest, and the plight of the nations to-day would suggest that any logical explanation of what lies below the political troubles would be welcomed in most or all the States of Europe. Sir Arthur's message is that unrest, as seen in these States, forms a modified reassertion of man's inherited instincts, and he makes out a good case for the individual racial instinct as a factor in the world's progress. The outcome of complete deracialisation of the world, if such a thing be possible, he would regard as a form of retrogression; but the manifestation of national independence must be controlled, and for this task statesmen will be fitted by mastering the evolutionary significance of races.

Infant Nutrition.

By Williams McKim Marriott, B.S., M.D., Professor of Pediatrics, Washington University. London: Henry Kimpton. 1930. Pp. 375. 25

A WORK from so authoritative a source as Prof. Marriott will not fail to command attention, and h book will be recognised as an important contributi to medical literature. It is not only a manual feeding, but represents an extremely successf correlation of the theoretical and practical aspe of infant nutrition in health and disease. Througho the book the reader will find emphasised two aspe of teaching which are characteristic. The fi may be expressed in the author's own words: " giving of food of too low a caloric value to meet infant's needs is by all odds the chief cause of fa in infant feeding." The second relates to importance attached to parenteral infections factors in nutritional disturbances of infancy. first chapters of the book are devoted to physiol and the metabolism of fats, carbohydrates, proteins are discussed in turn. The chapter artificial feeding of normal infants has the advantage that the rationale and technique of number of different methods are described in det while the methods recommended are comparat simple. The use of acid milks receives attention. The latter part of the work conta admirable accounts of the various nutritional disorde their treatment being presented in sufficient detail guide the practitioner. The section on marasmus particularly clear, and is rendered still more so by t feeding charts which accompany it. The final chap on acidosis and alkalosis discusses fully the biochemi processes which underlie these disturbances.

The book should have a wide range of utility; may be recommended equally to the specialist a the practitioner as one of the most lucid and comple presentations of the subject at present available.

Epidemiological Essays.

By F. G. Crookshank, M.D., F.R.C.P. Lond Kegan Paul, Trench, Trübner and Co., Ltd. 193 Pp. 136. 7*s*. 6*d*.

It is pleasant to see these valuable essays (previous published in THE LANCET and other medical journa conveniently collected in book form. They for delightful post-prandial reading. The collectio ranges from concrete suggestions on the advisabili of more active treatment of encephalitis letharg and lobar pneumonia to considerations which mig be regarded as a contribution towards moder astrology. The keynote to the frame of mind in whi the author has conceived the essays of more strict epidemiological import is to be found in the quotati from Hippocrates, "Airs, Waters, and Places" "If it shall be thought that all these things belon rather to meteorology, it will be admitted, on seco thoughts, that the study of the heavenly bodie contributes, not a little, but a very great deal inde to Medicine. Thus, with the seasons, men's diseas like their digestive organs, suffer a change."

Although no ready and convincing explanati can always be found for the benefits derived from treatment, the conception of its possibilities ha surely undergone a change in recent years. Dr Crookshank's essays have undoubtedly contri to this change, which is reflected in the increa respect shown by physicians towards the claims British and foreign health resorts.

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Jan. 24th, p. 210.

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the Local Government Act, 1929, may be found
long the lines of abolishing many of the small and
often derelict small-pox hospitals, and concentrating on a few larger institutions designed in such a way as to be suitable for use in non-epidemic times for some other disease or diseases. In order to avoid the turmoil of evacuation for the admission of sporadic cases of small-pox, and in any case to allow their transference to be done at reasonable leisure in a grave emergency, comparatively small isolated blocks, capable of independent administration, might be attached to one or more fever hospitals in each area, and these would also serve for the isolation of cases of variola minor. It is essential at least that the whole question should receive careful consideration. The recent widespread diffusion of variola minor, a disease apparently of comparatively low infectivity, is a warning that the population in its present partially vaccinated condition might be devastated by virulent small-pox if it once gained a footing. It seems to us that it would be unsafe to discard entirely the separate small-pox hospital.

RICKETS AND ADENOIDS.

EARLY in 1927 the Board of Education's Committee on Adenoids and Enlarged Tonsils decided to institute an investigation to test the conclusions of Dr. J. W. MCINTOSH and Dr. G. C. M'GONIGLE, medical officer of health for Stockton-on-Tees, who had demonstrated a close association between slight bony abnormalities, enlarged tonsils, and mouth-breathing. For this purpose 1638 unselected

5-year-old children have been examined by three independent observers and a full report has been published.[1] The schools in which the examination was carried out varied considerably in their social status, and the bony signs sought seemed to have a definite association with poverty and defective housing. Parietal and frontal bossing, knock-knee, bow-legs, and deformity of the chest wall, five of the signs selected, have been definitely standardised while the other four—enlarged radial epiphysis, spinal curvature, bowing of tibia, and beading of ribs—leave more to the individual judgment of the examiner. All three observers, however, found that knock-knee was the commonest abnormality, followed by parietal bossing, frontal bossing, and abnormalities of the chest wall. The nasopharynx was only "normal" in 17·4 per cent. of children who had not already been operated on. Some degree of adenoids was found in 54·9 per cent. and of tonsillar enlargement alone in another 14·2 per cent. The condition of the nasopharynx bore no relation to the social status of the school; in fact the proportion of children free from adenoids was highest in the poorest groups of schools. Of the 1293 children examined only 4·7 per cent. were free from caries, while another 11·7 per cent. had a slight degree of caries only. Severe caries was more prevalent in the poorer schools.

The conclusions of the investigators were that adenoids were as common among children free from rickets as among those showing some bony signs, but that adenoids of a severe degree occurred more frequently among children with two, three, or more signs of rickets than among those showing one sign or no sign. It is, of course, admitted in the report that the signs selected are not necessarily certain signs of rickets. The figures also suggest some connexion between widespread caries and adenoids. The dental condition was best in the group of 148 children whose adenoids had been removed, but this may point rather to a higher standard of parental responsibility than to any association between adenoids and dental disease. There was a similar association between dental defects and septic tonsils; there may be a common cause or the tonsil infection may be secondary to that of the teeth. There seems to be a definite association between defects of the temporary dentition and rickets.

If the signs accepted by these investigators are in fact signs of deficiency of vitamin D, then their results show that slight enlargement of the adenoid tissue may occur as commonly among children showing no signs of that deficiency as among those in whom it is marked, but that extensive enlargement is more frequent in children who have signs of rickets, caries, or dental hypoplasia. The association is not dramatic but is too consistent to be a coincidence; moreover, it was observed by three independent investigators. It is not, however, clear what the relationship really is. Social factors affect rickets and caries, but have no influence on adenoids. Vitamin D is closely associated with vitamin A, and the actual fac concerned in adenoids may be a deficiency o either or both vitamins. It has been shown th an adequate supply of vitamin A is necessary t maintain a healthy condition of the mucous me brane, and the lack of it may predispose to an ove growth of nasopharyngeal lymphoid tissue. Th view, however, seems to conflict with the fact th adenoids are as common in better-class schoo as in the poorest, though rickets and dental ca are commoner in the poorer schools. The Co mittee conclude that a deficiency of fat-sol vitamins, though not predominant, is one of factors tending to produce an overgrowth adenoid tissue, but think that there are o undiscovered factors affecting all classes a which counterbalance or mask the influence vitamins. What this other factor may be matter for speculation; some light might, perh be thrown on it by a census revealing the ar of diet which is most unpopular among childre all classes.

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FOG ON THE MEUSE.

THE official inquiry into the cause of the deat which occurred, early in December last, in th Meuse valley during a thick fog is not yet comple although an interim report issued a few days a states that, as a result of post-mortem examinati it has been ascertained that there was an irritati of the respiratory organs similar to that produc by sulphur dioxide. Meanwhile those intereste should study the account[1] of a visit paid b Prof. W. STORM VAN LEEUWEN, of Leiden, to th scene of the catastrophe, where he was provi by the Hygienic Commission with every facili for making his own survey. He writes:—

"During Dec. 1st. a Monday, there arose in t greater part of Belgium and Holland a severe f which was especially thick in the Meuse valley. the remarkable absence of wind this fog remai hanging in the valley until Thursday afternoon, th disappeared. to return on Friday and finally disapp on Saturday. On Tuesday and Wednesday the f hung especially heavy in the valley south of Li Here the valley is shut in on both sides by hills so 50 to 60 metres in height; the fog reached not mu higher than the edge of the plateau. On Monday and Tuesday nothing particular happened, but o Wednesday about midday the alarm was given a the doctors remained busy the whole of that ni and the next day up till Thursday. A large numb of persons complained of irritation in the no mouth, throat, trachea, and bronchi. The muco membranes were red and swollen, the redness a swelling extending—as has been shown by pos mortem examination—into the larger branches the bronchi without reaching the smaller one Among the patients there was violent cough irritati the respiration-rate exceeded 40 per minute, in th severe cases urgent dyspnœa rapidly came on, wi dilatation of the heart, very frequent pulse, an cyanosis; 63 patients died, all within someth more than 24 hours. At noon on Thursday the f disappeared and no new fatalities occurred, nor a new cases, while those who were still alive quick recovered and after a few days showed scarcely a symptoms of illness.

"In the severe cases there were no symptoms o inflammation of the lung (nor were any found post-mortem), only rhonchi and sibili were to be heard in the bronchi. Injections of adrenalin brought temporary relief. Cardiac tonics were also given, but their action was difficult to assess, especially as almost all the patients were nursed at home. How many cases occurred has not yet been settled. The number must amount to several hundreds; one doctor, for instance, visited 69 patients on the Thursday. Among the serious cases, and especially among the fatal cases, were many elderly persons, asthmatics, bronchitics, and cardiac cases, but it has been established with certainty that also young persons who before had shown no sort of illness became severely ill, while many otherwise normal persons who did not become ill experienced unpleasant symptoms of irritation in the neck and throat. No specific taste or smell was remarked, partly due no doubt to the fact that the subjects were already blunted to the smell of this neighbourhood. As I passed through the neighbourhood later I could quite clearly detect the taste, for instance, of sulphur dioxide.

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[1] Board of Education, Committee on Adenoids and Enlarged Tonsils. Second Interim Report. H.M. Stationery Office. Pp. 28. 6*d*.

[1] Münch. med. Woch., Jan. 9th, 1930, p. 49.

"It is important—as I ascertained with certainty in questioning doctors in the neighbourhood—that persons became ill and died who had not left the house or even left their bed, and it was made clear to me by the doctors that the fog (as for instance occurs with London fog) had certainly not penetrated into the houses. This means that in the higher temperature of the dwelling the fog droplets became vapourised, which often does not happen in London owing to an oily layer surrounding the droplets.[2] Further, it is worthy of mention that although the fog hung in the whole Meuse valley and far beyond its limits, cases of illness occurred only in a region 25 km. long by 1 to 2 km. broad south of Liége. The town of Liége itself remained free. Huy had only a few patients and no fatal cases, while Engis, 20 km. south of Liége, had relatively the most cases and fatalities."

At the close of this admirable summary Prof. van Leeuwen adds his own explanation of the catastrophe. He mentions only to discard such rumours as shortage of oxygen, presence of war gases, fall from the sky of Sahara sand. The theory that fog in itself was responsible seems, he says, little likely to one who dwells on the Dutch coast, where for days on end a cold thick fog may hang without causing sickness. Liége itself lay in thick fog and was unscathed. The clue to the catastrophe must be found in the fact that the region is so strewn with zinc, superphosphate, and other works that under normal circumstances the air contains sulphur dioxide and hydrofluoric acid, if not other irritating substances. Owing to the acidity of the soil the neighbourhood has been spoiled for agriculture and grazing; breeders have obtained damages from the manufacturers on this account. Electric light bulbs, it seems, lose their transparency in one part of the valley quicker than elsewhere, and the inhabitants are aware of irritating substances in the air, especially in the neighbourhood of Engis. From these data he concludes that poisonous substances are present even in normal times in appreciable quantity in the air of the neighbourhood. Now from Dec. 1st to 3rd the air in the valley was too cold to rise, while horizontal ventilation was excluded by the stillness. Hence a concentration of the effluent factory gases must (he underlines "must") have taken place, and finally the threshold of human tolerance was reached on Dec. 3rd. Whether certain factories discharged on this day a special quantum he regards as no longer to be settled, but everything points to the fact that in the whole neighbourhood the air contained too large a quantity of harmful products, especially in the village of Engis, where big factories were at work. Search is now being made for the guilty effluents. That a repetition of the occurrence is possible is shown by the fact that something similar took place in 1911, although on a smaller scale.

Prof. Storm van Leeuwen concludes with the remark that the occurrence has a general importance for medical climatology, because it has shown that in a body of cold stagnating air the concentration of harmful products may reach the limit of tolerance; and this holds true, not only for poisons from chimneys, but also from other sources, the ground for example. In the Meuse valley Nature in a colossal experiment has furnished proof of this possibility. We should be unwise to forget that a similar inversion of the temperature gradient is present over our own fogs, acting as a lid which may hold down fumes discharged below it, whether from domestic chimneys or from power stations.

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HOSPITALS, DRUGS, AND PANEL PATIENTS.

The Eccles and Patricroft Hospital recently made application to the Lancashire Insurance Committee to be put on the National Health Insurance panel as an institution to supply members of the staff who are insured persons with drugs, medicines, and appliances, for which payment would be made out of the insurance funds. The proposal has been turned down by the county insurance committee, but it is understood that the Patricroft Hospital authorities intend to appeal against the decision. The desire of the hospital authorities to supply medicines to the insured members of the staff is not in itself a matter of very considerable importance, but there is a question of principle involved, and it does not require much imagination to foresee the time when, by a simple extension of the principle, hospitals would be converted into dispensaries for insured persons receiving treatment in the wards or as out-patients. It is just as well in the circumstances that the county committee has refused to take a step in a somewhat dangerous direction. Pharmaceutical chemists to-day encounter a good deal of competition from a variety of quarters, and it is said to be very difficult for a large proportion of them to make a fair living solely out of the professional side of their business; hence it has become necessary for them to act as vendors of articles, many of which have but the remotest relationship to the dispensing of medicine and the sale of drugs. We do not think for a moment that hospital authorities as a whole would wish to encroach upon the chemists' ground.

Donations and Bequests.—Under the will of the late Mr. Isidore Aron, of City-road, London, subject to life annuities, the Jewish Home for the Dying, Nightingale-lane, will receive nearly £700, and the Metropolitan Hospital, Kingsland-road, and the Jewish Hospital, Stepney, £1000 each. Smaller sums are bequeathed to the London Hospital, Whitechapel; the Jewish Home for Incurables, Tottenham; and the West End Hospital for Nervous Diseases.

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[2] As to London fogs penetrating the houses we now know that this is due to the presence of great numbers of solid soot particles which remain after the water has evaporated.—Ed. L.

ANNOTATIONS

HOW MUSCLES WORK.

In the Hughlings Jackson Memorial Lecture, delivered before the Section of Neurology of the Royal Society of Medicine on Jan. 28th, Sir Charles Sherrington admitted his audience to some of the mysteries of the laboratory, where our simplest actions are subjected to an analysis and experimentation that make them seem more complex than the highest flights of man's mechanical invention. The nervous system, as he said, is both a form and a series of events, and for the physiologist the best place to confront both is the Jacksonian third or lowest level, where is found the motor centre. It is now well known that every reflex stimulation fractionates its muscle; it does not reduce it to separate muscle-fibres but to a number of motor units. The soleus of the cat, for instance, contains some 230 such units, while the inner head of the gastrocnemius contains about 500. The units of the latter muscle have on an average a twitch value of eight grammes. When the fibres are put into tetanus they arrive at a fixed value, in the sense that no increase of stimulus will increase the contraction. No one nerve, however, possesses the whole of any one muscle. Faradisation of the internal saphenous, for instance, tetanises about 190 of the 300 odd units that make up the flexor of the ankle. There is evidence that, besides those units which are thrown into complete tetany by any given stimulus, there are certain other units which are affected, as it were, subliminally; as Sir Charles put it, they are tickled without being contracted. Thus investigation of any muscle unit reveals four grades: a supermaximal and a maximal, a subliminal, and an unexcited. Three years ago the work of Adrian and his colleagues and of Denny Brown filled in the gap between the maximal and the subliminal grades by demonstrating a group of fibres firing slowly at a subtetanic rate. Different rates of subtetanic grades were observed concurrently in the same muscle, and it was seen that there are in every motor neurone pool a number of motor neurones in this intermediate state of excitation, and that the firing of the motor unit does not necessarily follow closely the rate of impulse entering from the afferent nerve.

Laboratory conditions are to natural conditions, Sir Charles Sherrington said, as a musical note is to a noise, and the natural stimulation will exert a richer inequality of stimulation on the motor neurone pool. For instance, beneath the ipsilateral flexion reflex familiar to every worker there lies the ipsilateral extension reflex used for progression; the former can only be separated from the latter by avoiding stimulation of the afferent nerve altogether and going direct to the receptor organs. In real life, again, the influence of the labyrinth complicates the reflex; it may multiply it six or seven times by working on these fringe areas between the grades. If between the application of two identical stimuli the head of an animal is moved ever so slightly in such a way that the labyrinth is brought into the right position, the response may be enormously altered. Thus it transpires that the motor centre is more than a passive relay station on the path out to the muscles. It can and does grade its excitation of the individual motor unit; it is driven and fed by centripetal impulses and acts on the individual motor unit by a process of internal summation, so that it can exert a whole scale of degrees of excitation. One secret of its coördinative power is this ability, by shifting the fringes between the grades, to summate impulses. When a spinal animal is set on its feet, a reflex adaptation to its own weight will take place and the extensor reflexes will be called on to bear the burden. Their response shows a certain quantitative scale. The weakest form is simple standing, when all that the extensors have to do is to prevent the limbs from buckling under the weight of the body. They are stretched, and at once the stretch reflex is involved. This reflex, however, can by no means activate the whole of the quadriceps extensor. It is a delicate postural reflex which affects only a deep slip of the muscle—just enough to counteract the effects of gravity. From this weak type of reflex there is a whole graded series of reflexes, through walking and running to galloping and jumping. In a dog of which the spinal cord has been cut high up, it is sufficient merely to separate the pads of one foot for all four limbs to be thrown at once into the gall position. The reflexes spread into the whole of the muscle, which has in reserve huge quantities of units three times as strong as those elicited by the postural reflex only. Sir Charles Sherrington believes that there is a great hope that before long this neuromotor mechanism may yield up the secret of its precise activity. Such a possibility calls, he said, for close liaison between clinic and laboratory; to decipher how nerve manages muscle may be to decipher how nerve manages itself, and it may well be that the nerve has in it types of excitation and depths of inhibition greater than the muscle can express—heights and depths which will lead us towards an understanding of the great mental problems of mankind.

NATIONAL COUNCIL FOR MENTAL HYGIENE

The annual report of this Council for 1929-30 opens with a reference to the Parliamentary history of the Mental Treatment Act, which signalises the first triumph of those who have been struggling against the spirit of apathy and resignation formerly characteristic of the public attitude to mental hygiene problems. Although this measure has now become law, the outlook for the future depends upon proper use being made of the Act, and the Council have now the twofold duty of seeing that provision for voluntary treatment—which is optional on local authorities—is actually made, and that the provision for temporary treatment—which is compulsory—is adequate. The Council look forward to the time when public opinion will be ready for a further advance: the extension of temporary treatment to any period likely to benefit the patient and its extension to early unwilling cases. The report also mentions the first International Congress on Mental Hygiene, which was held at Washington last year. The message of the Congress to this country is naturally largely the message of America, and the thing that most impressed delegates was the determination of the States to see that the moulding of their future citizen shall not suffer by the neglect of psychiatric and psychological help. America intends to attempt the solution of its psychiatric problems by child guidance, social welfare, and preventive work of all kinds.

All those who attended the last conference of the National Council in London in November, 1929, will look forward to the next conference, which is to be held from May 27th to 29th of this year. Among the other activities of the Council have been a number of successful public lectures and drawing-room meetings. They have coöperated with the Tavistock Clinic in an attempt to raise funds for the valuable work of both. The various subcommittees have inquired into the treatment of attempted suicide, the registration of nursing homes, the prevention of delinquency, the preventable causes of nervous strain for both children and teachers in school life, social work in connexion with mental hospitals, observation wards in poor-law infirmaries, and the treatment of mental defectives. It is to be hoped that the Council will obtain the funds necessary to enable them to go on with their important work.

A NEW UROGRAPHIC MEDIUM.

WHILE intravenous or "excretion" urography is a valuable addition to the methods of genito-urinary surgery, the older technique of retrograde pyelography nevertheless retains its place. However good the shadows derived from intravenous urography may be, they lack the clearness and density of those obtained by distension of the renal pelvis. For this reason work is still being done on the best media available for outlining the pelvis after ureteral catheterisation, and Adolph A. Kutzmann reports good results with emulsified campiodol, which is a mixture of iodised rape-seed oil, acacia, and distilled water.[1] He finds that an emulsion containing 10 per cent. of iodine gives as good a shadow as that obtainable from the usual 12·5 per cent. solution of sodium iodide, but whereas sodium iodide is irritating to the tissues and often produces a severe reaction and pain, the campiodol emulsion is non-irritating.

ANTITOXIN TREATMENT OF DIPHTHERITIC PARALYSIS.

THE use of antitoxin in diphtheritic paralysis, on which we commented a few months ago,[2] is illustrated by a striking if not altogether convincing case published by Dr. J. Woroschilsky,[3] of Odessa. His patient was a girl aged 4 years, who three weeks after an attack of faucial diphtheria, treated by injection of 6000 units of antitoxin, developed paralysis not only of the palate, as manifested by a nasal voice and regurgitation of fluids through the nose, but also of the arms and legs, as well as abolition of the knee-jerks. As this condition indicated systemic impregnation with diphtheria toxin, Dr. Woroschilsky decided to continue serum treatment by daily intramuscular injections of 6000 units of antitoxin. After the third injection considerable improvement set in, so that the injections were given only every third day, and after six injections, or a total of 36,000 units, complete recovery took place. Woroschilsky claims that the case is extremely instructive from the following points of view. In the first place, he says, it shows that diphtheria antitoxin can be given even as long as three weeks after subsidence of the initial angina with a favourable effect on the characteristic complications. *Secondly, the case indicates that* large quantities of antitoxin in divided doses can be given to a young child without causing any symptoms of anaphylaxis. Lastly, it was remarkable that the child who had previously been the subject of the exudative diathesis as manifested by frequent attacks of bronchitis, asthma, tonsillitis, obstinate entero-colitis, and recurrent eczema and urticaria had no further symptoms of this kind and subsequently developed normally in every way. Woroschilsky suggests that, in addition to its specific action, the serum exerted a beneficial influence upon the patient by protein-therapy.

BURNING DURING ANÆSTHESIA.

ACCIDENTAL burning of an unconscious patient has been a not very infrequent occurrence, and has led to actions at law before the one related under "Medicine and the Law" last week. There is, however, one unusual detail in the facts as they emerged at the trial, and that relates to the position of the damaging hot bottle. It was placed apparently between a draw-sheet and mackintosh on the bed, and it was placed there not by a nurse but by a maidservant. The position of the bottle was thus so inconspicuous that when two other bottles were removed at the matrons directions this one easily escaped observation. It seems plain that, supposing for the moment that the responsibility for the safe state of the bed on the patient's return lay with the doctors, they could hardly be blamed for not having a *bottle removed which had been successfully,* if unintentionally, concealed from them. The doctors would surely be showing enough care if they looked in the bed, and seeing no bottle there, allowed the reposition of the patient. They should not be expected to have to feel the bed for a submerged hot bottle. The question of responsibility, moral as well as legal, admits of argument. Counsel's remarks in opening the case for the plaintiff suggest that he would regard both surgeon and anæsthetist as responsible. He is reported as saying:

> "an anæsthetist who was responsible for making a patient unconscious was under a duty to take all reasonable care to guard the patient from peril such as that encountered by the plaintiff, and to see that the unconscious patient was not put into a bed where she could receive such terrible injuries. A surgeon who performed an operation in the circumstances of the present case was bound to make sure that the patient did not come to such injury. It was not enough for the surgeon or the anæsthetist to say that they left the care of the patient to the nurse."

Yet in practice it is perfectly obvious that much care of the patient must be left to the nurse. Having chosen a competent nurse and given her directions, the doctor's responsibility is, in some circumstances, ended for the time being. If the nurse fails in properly executing her orders the responsibility cannot be shifted back to the doctor. If it could, then safety from blame for the doctor could only be secured by his doing his own nursing—an obvious absurdity. Actually most anæsthetists regard themselves as responsible while the patient is unconscious and do in fact see him/her in bed after operations. But nowadays when post-operative sleep is often a matter of hours it is obvious that the anæsthetist must be able to shift his responsibility to the nurse and to leave the patient when he has given the necessary directions. It might be maintained that the surgeon is the responsible person throughout, and the anæsthetist merely his agent. In the operating theatre, however, at the present day it is clear that the anæsthetist has a separate responsibility and the surgeon would not be blamed for an accident directly due to the anæsthetic. This responsibility of the anæsthetist it seems logical to consider is prolonged into the bedroom where the patient lies still unconscious. It appears that plaintiff's counsel realised the impossibility of holding the doctors responsible in all circumstances, for after explaining that there was never any allegation of negligence as far as their professional skill was concerned he said :

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[1] Amer. Jour. Surg., 1930, x., n.s., 320.
[2] THE LANCET, 1930, ii., 1137.
[3] Therapie der Gegenwart, December, 1930.

> "The allegation in the case of the doctors is a particular allegation that in particular circumstances a particular duty rested on the surgeon and the anæsthetist. Having regard to the evidence he would not be able to substantiate that allegation of negligence and he wished completely to withdraw it."

We imagine that these words would apply even if the nursing home had been selected by the surgeon and not by the patient. There was, by the way, no allegation, except in the lay press, that the doctors' fees were too high; as a matter of fact they were moderate, for the total quoted covered the surgeon's fee for the operation as well as 445 visits.

The purely medical aspect of these burns caused during anæsthesia is interesting. The circumstances of their causation are peculiar, admitting of prolonged pressure by a heated object on tissues which are anæsthetic and immobile. The resulting lesion is generally deep and slow to heal. It is probable that during anæsthesia the skin and underlying structures are liable to damage from an amount of heat and of pressure that would be much less harmful to the conscious person, supposing that he were able to tolerate them. And the heat need not, it seems, be very great. This may be owing to the depressed circulation in the affected part as well as to deficient trophic nervous influence during anæsthesia. The readiness with which the surface of the eye is damaged in a person who is under an anæsthetic is another evidence of the extra susceptibility of patients in this state. Plainly those whose duty it is to instruct students in giving anæsthetics, and nurses in caring for patients, after them cannot dwell too emphatically on the precautions which must be taken to protect the eye during anæsthesia, and to avoid the possibility of contact between the unconscious patient and any heated object. Burns have arisen not only from hot bottles after operations but from contact with a lamp or from a heated table in the operating theatre itself.

EVIDENCE OF A VIRUS IN THE BLOOD IN PERNICIOUS ANÆMIA.

Prof. Axel Holst, whose pioneer work on beri-beri was one of the first steps towards the discovery of the part played by vitamins in certain diseases, has just published[1] an account of laborious investigations conducted over a period of many years into the ætiology of pernicious anæmia. Certain of these led him into blind alleys; but the following observations will no doubt challenge repetition. To solutions of hæmoglobin obtained from blood clots and containing a little serum, he added 0·5 c.cm. of blood taken from patients suffering from pernicious anæmia or from some other disease. The solution was then passed through a Pasteur-Chamberland filter L 3 to get rid of any streptococci or other contaminating bacteria that might be present. From 0·5 to 1 c.cm. of the filtrate was transferred to a new solution of hæmoglobin and kept at a temperature of 37° C. After about 24 hours all the solutions became somewhat cloudy and darker in colour; within a few days the pernicious anæmia tubes became much darker than the controls. When a few drops were transferred from these tubes to a new series of tubes containing a solution of hæmoglobin, the pernicious anæmia tubes again soon became much darker than the controls, and the same thing was observed during repetitions of this experiment in the course of several months, provided the interval between each was not too long. Prof. Holst has thus examined the blood of 23 patients suffering from pernicious anæmia, in 17 of whom the above phenomenon was observed. Among these 17 were several making a good recovery under treatment with liver. He concludes that his observations indicate the presence, in the blood of patients suffering from pernicious anæmia, of a filtrable agent capable of reproducing itself under favourable conditions. He has also demonstrated spectroscopic changes in the pernicious anæmia tubes but not in the controls. In the former the two hæmoglobin bands became dark or even black whereas they remained comparatively light in the latter. These phenomena were observed even when a Pasteur-Chamberland L 5 or L 7 filter was used. In the presence of such a minute organism it is very doubtful, in Prof. Holst's opinion, if the rods and other bodies observed in the red blood corpuscles of patients suffering from pernicious anæmia represent forms of the causative virus. He has hitherto failed to induce the disease in animals by inoculating them with cultures of his filtrable virus, and he makes no definite claim as to the part it plays in the ætiology of pernicious anæmia.

THE TEES SURVEY.

THE third annual report of the Water Pollution Research Board which has just been issued (H.M. Stationery Office, price 9*d*.) contains an account of the progress which has been made up to June, 1930, in the various researches undertaken by it. These include the treatment of sugar beet effluents, the biology of activated sludge, base exchange processes of water softening, and the biochemistry and biology of river pollution and self-purification. One of the most important and interesting researches conducted by the Board is the hydrographic, chemical and biological survey of the River Tees, a stream of moderate size, comprising about 71 miles of non-tidal and 25 miles of tidal water and having a flow found by gauging to vary from 100 million gallons or so a day in a normal summer to 500 million or more in high winter state. The average flow of the Thames over a period of 35 years has been found to vary from 500 million gallons in summer to 2400 million in winter, with daily variations from less than 100 million to about 10,000 million. The Tees is therefore of convenient size and it receives typical sewage and industrial pollution at various points, with subsequent recovery in some cases. Clearly the correlation of chemical and biological conditions with seasonal and hydrographical conditions in such a river should yield data of value in the study of pollution and its amelioration in streams of all kinds. This work has gone on for a year, and it has been decided to go on for a longer period if only to eliminate the effects of variations inseparable from observational as distinguished from experimental investigations.

In the Tees, as in many other tidal rivers, the fresh-water flow is, at any rate in summer when it is most needed, small in relation to tidal movement, in the region where the greatest pollution is found. In consequence a belt of highly polluted and poorly oxygenated water oscillates between Stockton and Newport at high water, and near the Transporter Bridge at Middlesbrough at low water. A very determined attempt is being made to connect the chemical data with the volumes and nature of the effluents reaching the river and the question whether the absence or scarcity of living organisms in this region is definitely to be connected with pollution or with the inevitable great and rapid changes of salinity due to the cycle of the tides is to be investigated by parallel work on a similar but unpolluted estuary. Great mortality occurs amongst migratory fish-flounders, eels, sea trout, and salmon which endeavour to pass through the polluted zone on their way to non-tidal water. It is clear however from the permanence of invertebrates and algæ that the water between tide marks is never sufficiently toxic to destroy all life. There is very little seasonal variation in the life of the tideway although this is marked in the fresh-water portion. The upper reaches have been examined at 15 points from the falls at Cauldron Snout to Yarm. The results obtained so far show that the decomposition of organic matter goes on at a much more rapid rate in the hot summer months than at other times. J. Loeb found that the rate of photosynthesis doubled for a rise of 10° C., leading to the presumption that biochemical changes are affected similarly to other chemical reactions. The variations in the composition of river water, and of the gases dissolved in it during the 24 hours of the day, have been examined on several occasions and a photo-electric apparatus is being used to enable the changes observed to be correlated with the actual intensity of light. There seems to be a distinct correlation between pollution and the presence of the bloodworm (a dipterous larva) and other similar associations are suggested.

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[1] Norsk Magazin for Laegevidenskaben, January, 1931.

Little systematic combined chemical and biological work has been done in this country although many river surveys have been made, notably by the late Royal Commission on Sewage Disposal and more recently by the Fisheries Branch of the Ministry of Agriculture. These have, however, been mainly chemical. The neglect of freshwater biology is likely to be remedied when the newly formed Association for Freshwater Biology is really at work. In Germany rather more seems to have been done and methods have been worked out for collection of river flora and fauna. In the United States more attention has been given to lakes, which, forming closed communities, are in some respects (e.g., as to plankton) easier to examine. A recent sanitary survey of the River Murray, bounding the States of Victoria and New South Wales, although very thorough, was purely inspectional. The important investigation on the Tees, which appears to be fundamental research, will therefore be watched with the keener interest.

THE BULLETIN OF HYGIENE.

THIS bulletin came to life in 1925 in response to the need of concise summaries and reviews on all branches of public health and preventive medicine, and for six years it has been issued by the Bureau of Hygiene and Tropical Diseases under the direction of an honorary managing committee, appointed by the Secretary of State for the Colonies, of which Dr. A. T. Stanton, chief medical adviser to the Secretary of State, is chairman. Commencing with the first issue of 1931 an endeavour is being made to increase the usefulness of the bulletin by a regrouping of subjects, and by abstracting papers and journals as soon as possible after their publication or receipt. The principal headings are as follows: (1) Public health administration and social services. (2) Industrial hygiene. (3) Hygiene, diseases and accidents of special industries and occupations. (4) Vital statistics and epidemiology. (5) Port and ship hygiene. (6) Sanitation, including housing. (7) Food and nutrition. (8) Bacteriology and immunity. (9) Sanitary law. (10) Miscellaneous. (11) Book reviews. Certain experimental and laboratory work, including such things as new techniques, special research, and new disinfectants, which are of interest to the medical officer of health although still on trial, are to be noticed in small type in the appropriate sections. Rigid separation of subjects is of course not possible and cross-references will be added to help the reader. The abstracts and reviews are signed for the most part by names which carry weight in their department of science, and some of the abstracts are critical as well as compendious. It is, we think, doubtful whether the bulletin is as widely known as it deserves to be; it is one of the really satisfying things that reaches us, in scope, execution, and format, and there is no other periodical which covers the same field. It appears monthly and is distributed to subscribers for the sum of 21s. a year post free. Communications relating to the *Bulletin of Hygiene* can be addressed to the assistant director of the Bureau of Hygiene and Tropical Diseases, Keppel-street, Gower-street, London, W.C.1.

A PRIMER ON FRACTURES.

IN order to bring the treatment of the common types of fractures of the limbs constantly before practitioners the American Medical Association have appointed a Coöperative Committee on Fractures to organise lecture demonstrations. Each year a series of such demonstrations is given by a group of lecturers in a large number of centres. For the purpose of these lectures an illustrated folder [1] has been prepared depicting by drawings and short descriptions the main methods of dealing with various fractures. Surrounding the illustrations are a number of legends (perhaps aptly termed slogans) conveying important messages for the handling or treatment of patients, some of which, such as the necessity for taking radiograms before and after reduction, are constantly repeated. The demand for these folders has been so great that the committee decided to assemble them under one cover as a "Primer." The result is a useful publication. It is emphasised that the intention is not to standardise treatment, but to present what constitutes generally accepted methods of reduction and splinting and management of limb fractures. The illustrations are not always very helpful in practice, but the same applies to most books on fractures. The text contains much valuable instruction and direction in a simple, concise form which will appeal to many practitioners.

A TEST FOR SUGAR IN URINE.

ALL the usual laboratory methods for the qualitative estimation of urinary glucose in the urine require the aid of heat, but recently F. Leti [2] has devised one which may prove useful to practitioners because it works in the cold. The reaction is based on that of Nylander which gives a black coloration due to the precipitation of bismuth and in which a considerable quantity of heat is developed by the dissolving of sodium hydrate. The reagent, which is itself thermogenic, is prepared as follows: 10 g. of sodium hydrate are fused with $\frac{1}{2}$ g. of subnitrate of bismuth in a silver or nickel crucible by agitating the mixture; the mass then assumes a milky appearance. Care must be taken that the temperature of the hydrate during fusion is not too high; it should not be greater than the point of fusion, otherwise the mass will become reddish, yellow, or brown owing to the formation of various oxides of bismuth. The liquid mass is then poured out on a cold and dry surface, where it immediately solidifies. It is powdered quickly—for it is very hygroscopic—and kept in a closed receptacle. Whereas in Nylander's test the heat developed by the dissolving of the sodium hydrate in water is not utilised in any way, with the new reagent the heat is not lost but is only developed at the moment when it comes in contact with the urine. The test is performed by placing about 300–400 mg. (grs. 5 or 6, an excess being immaterial) on a microscope slide or watch glass, and adding one drop of urine. In the presence of glucose blacking takes place immediately; in its absence the powder remains white. Leti claims that this reagent saves both time and trouble since it enables anyone to ascertain the presence of sugar in the urine, although only in a qualitative sense.

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[1] Illustrated Primer on Fractures. Prepared by the Coöperative Committee on Fractures. Under auspices of Section on Surgery, General and Abdominal, and Section on Orthopedic Surgery, in coöperation with Department of Scientific Exhibit of the American Medical Association. Chicago: American Medical Association, 1930. Pp. 55.

[2] Policlinico, Practical Section, Jan. 12th, 1931, p. 49.

BEIT BEQUESTS AND FELLOWSHIPS.

Sir Otto Beit, who died on Dec. 7th of last year, leaves a fortune provisionally estimated at over £3,600,000. He has given his executors the sum of £290,000 to distribute to public and charitable bodies, and the following are among the beneficiaries: King Edward's Hospital Fund, £50,000; The Royal Society, Guy's Hospital, the London Hospital, and St. George's Hospital, £10,000 each; the London Homœopathic Hospital and the Strangeways Research Laboratory, Cambridge, £5000 each, the Children's Sanatorium for the Treatment of Phthisis, Holt, Norfolk, and the Seaford Convalescent Home £2500 each.

It is announced in our advertisement columns that Sir Alfred Beit has been appointed a trustee for the Beit memorial fellowships for medical research in place of his father. Prof. T. R. Elliott has been appointed honorary secretary in place of Sir James Kingston Fowler, who has resigned, but remains a trustee. Sir John Rose Bradford has become a trustee in place of the Earl of Clarendon; Prof. J. C. G. Ledingham has joined the advisory board, and Sir Charles Martin, a member of this board since the foundation of the trust, has resigned on taking up work in Australia.

BCG AT THE PARIS ACADEMY OF MEDICINE.

THE scientific calm of the Académie de Médecine was broken on Jan. 20th by Dr. Joseph Lignières, professor of bacteriology in the Veterinary Faculty at Buenos Aires, when he made a comprehensive attack upon the reputation of the Calmette vaccine. Judging by contemporary lay and medical comment in Paris it might be thought, he said, that B C G had received a final blessing throughout the entire world. The truth, however, was otherwise, and at no congress had any vote on the merits of the vaccine been taken—an act of prudence on the part of its sponsors. In particular he regarded as improper Calmette's employment of the total figures of infantile mortality; the report from Roumania of a fall in infant mortality from 25 to 2·3 per cent. was inadmissible. At the International Congress of Pædiatrics in Buenos Aires last year the proposal to extend B C G vaccination to all new-born children did not gain a single voice. After this preface Prof. Lignières remarked that evidence was steadily coming in to show that the B C G strain is not definitely fixed. He described the results of Dreyer and Vollum, published in our own columns,[1] as a confirmation of those of Petroff, and went on to speak of a long series of cultures, made by himself in 1929–30, in which, when egg was added to the medium, some of the cultures regained the property of producing progressive lesions in the guinea-pig. It was, however, a curious fact that the cultures which produced these lesions when cultivated anew on the same medium did not become more virulent; sometimes, indeed, the guinea-pigs which received them recovered from their lesions as after the non-virulent B C G. Turning to the Lübeck catastrophe, he remarked that Calmette, and the German investigators after him, were perfectly right in affirming that the classical B C G vaccine had nothing to do with it. The suggestion that non-virulent B C G had been mixed with a subvirulent human strain was, he said, not impossible, however unacceptable to laboratory workers; but he went on to make the remarkable statement that certain information collected at the Lübeck laboratory would suggest that the vaccine had been cultured at Lübeck on an egg-containing medium—which, if confirmed, would logically explain the tragedy. It would seem, he said, that Prof. Bruno Lange in discarding the possibility of spontaneous recovery of virulence was still impressed with the possibility of recovery of virulence from other causes. It was in this direction, said Prof. Lignières, that his own work was leading. Whatever the reason, the German Government continued to maintain its prohibition of B C G, and the same was true of Chile. Finally he came to his trump card—namely, the discovery by Dr. E. Hormaeche, professor of bacteriology at Montevideo, in collaboration with J. E. Mackinnon, of a means of conferring virulence at will on the classical B C G. In a paper published in the annals of the Faculty of Medicine Hormaeche had shown that in guinea-pigs previously inoculated with a streptococcus the B C G vaccine produced tuberculous lesions which after the third passage were progressive and tended to generalise. Once isolated this virulent B C G preserved its pathogenic qualities. Immediately he heard of this work Prof. Lignières obtained Hormaeche's streptococcus and permission to repeat his experiments, which his own results corroborated as far as they went. While he did not think that all types of streptococcus would augment the virulence of B C G, Hormaeche's observation would explain the occurrence of lesions in certain subjects after vaccination with B C G. This completed the long chain of evidence which justified him in counselling prudence and in reserving the Calmette vaccination for infants living in a tuberculous environment. The importance of the Calmette-Guérin discovery was patent, but before the vaccine became universal it would have to be rendered absolutely inoffensive. Prof. Léon Bernard having replied with some asperity that no congress ever took a vote on a scientific discovery, that Prof. Lignières himself had had a share in the employment of B C G to immunise cattle, and that the veterinary commission organised in Paris by the League of Nations had recognised the absolute innocuity of B C G, Prof. Lignières refused to surrender any part of his strategic position.

WE regret to announce the death on Monday last of Mr. A. G. R. Foulerton which occurred at his residence, Morpeth-terrace, S.W., after a short illness.

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[1] THE LANCET, Jan. 3rd, p. 9.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

VI.—LAW: THE RÔLE OF THE FATHER.

IMAGO: INBORN FEELING PATTERNS.

THE principle that the individual is more than the um of his experiences has already been stressed. Apart rom those individual inborn characteristics which ater give rise to the uniqueness of personality, there re certain instinctive and emotional tendencies hich are to be found deep-rooted in us all, originating ot in our own experience but in a distant racial ast, and yet actively causative of much subsequent ehaviour. It is the purpose of this chapter to iscuss, in particular, that inborn "feeling pattern" which the *father* is the object. Does it seem nprobable that there should be in the individual a eling pattern prior to, and *independent* of, actual xperience of the father? But when we consider that eling patterns are born in the individual as the esult of the summation of *racial* experience, we alise at once that the father must have been one of he commonest of all experiences.

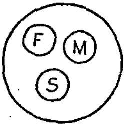
We may very broadly divide the feeling patterns hich we are going to consider in this and the next cture into three—namely, "feeling about the ather," "feeling about the Mother," and "feeling bout Self." These three have arisen as the result f *racial experience* and, in the individual's lifetime, re only subject to *secondary modification*.

These "father" and "mother" feeling patterns re referred to as father and mother *imago*, and contain uch material of a very primitive and unconscious rigin. "Father imago" is the source from which avage and civilised, child and adult, derive their onceptions of gods and devils, magicians and giants, riests and medicine-men. Associated with these rimitive, archetypal figures is much of mystery, ajesty, and power. The original father imago eling pattern is subject to modification by experience f the actual objective father or father-surrogate, ut it is only upon this primitive pattern that ultimate xperience reacts by a process of secondary modifica-on. It is very important to realise this, because of e consequences which result where the individual as in childhood lacked the influence of a father, who ay have died before birth or in early infancy. there were no father one might expect there would be ery little of the "feeling about father," but this is r from being the case. It is as if the absence of a real bjective father has permitted a free and unfettered evelopment of the imago pattern, and it seems to be e fact that fatherless individuals are more susceptible the development of father imago feelings than those whom the actual experience of the father is able to use their modification. It is also necessary to realise at actual experience of a real objective father ay still permit in some cases of *un*modified imago actions. The experience of father during the dividual's lifetime may be entirely "good," if the ther is happy enough to deserve that description. he individual reaction, however, to this experience a good father may be, and very often is, of an nfortunate and undesirable kind. It is a matter of ommon experience that good fathers often have children who fail to come up to the standard which their fathers have set them. This is due to the development of *imago* reactions which interfere with the imitation due to suggestibility which might be expected.

Although this factor of suggestibility is important, it does not entirely account for individual reactions to experience of the father. Of the two, it is probable that imago reactions are the more important. These imago feelings, which have been recapitulated within the individual and become modified by experience of the father or father-surrogate, then give rise by extension to certain important derivatives, which comprise the whole conception of "*authority*" and "*law*." The feeling which the individual develops with regard to authority and law is the result of the modification which has taken place in imago feeling through his later experiences. Father imago is therefore something independent of father, deeper and greater than experience, and the derivatives of father imago extend beyond the individual's attitude towards his father, determining his attitude towards all those who are in authority and his opinions on various subjects, especially those of religion and politics.

IMAGO AFFECTS.

FIG. 1.



In the diagram (Fig. 1) the outer circle represents the vidual as a whole. The three inner circles represent his feeling about his father (F), his feeling about his mother (M), and his feeling about himself (S). We are again dealing with the primary concept of the eternal triangle, and again, for the sake of simplicity, we will limit our consideration to the male. It may be stated at once that, from clinical experience, it is found that as far as "S" is concerned, his inborn imago feelings are according to the primitive pattern of the desires and fears of the *Œdipus complex.* What then are these primary "affects" or feeling tones concerned with father and mother, but independent of actual experience of them? They may be discussed under the headings of inferiority, power, guilt, retaliation, and fear.

A. *Inferiority.*—The standards of measurement taken by the unconscious are crude and simple, and the effect of stature and age is of great importance in deciding the degree of superiority and inferiority. The infant born into the world is in a position of extreme inferiority. He is so small, whereas the other members of the circle in which he finds himself are relatively so large, especially father. He is so young and by contrast father seems so old, and by that so much superior. He is so weak, father so strong, and on every hand the superiority of father is demonstrated. The consequence is the development, so often and so extreme as to become an inborn pattern, of a feeling of *primary inferiority*, especially felt with regard to father. This factor of inferiority is one of the most important components of father imago feeling. With this is associated the feeling of *jealousy*: "because he is so much stronger than I am, I feel he can take away from me all that I most want to keep for myself."

B. *Magic Power.*—Associated with this feeling of inferiority is the sense of power by contrast which father possesses. Comparatively, father is *omnipoten* and the contrast is one which endows the father figure with all the qualities of *magic*. The second factor in father imago feeling is therefore the desire for magic power, through which may be obtained the superiority of father. Magic power is omnipotent and effortless, a matter of magic carpets, seven-league boots, miracles and electric buttons. With this desire for power, "to be like father," is associated the feeling of *envy*.

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* A course of 12 lectures delivered under the auspices of the avistock Clinic, Tavistock-square, by Dr. E. Graham Howe aring the autumn session of 1930. Earlier lectures of the ries have appeared weekly in THE LANCET since Jan. 3rd.

C. *Guilt.*—To what extent does feeling about mother have an effect on feeling about father? A simple statement of primary feeling tone may be made as follows: "I love my mother. I want my mother for myself. My father has my mother, and he is omnipotent. If my father knew I wanted my mother, he would be angry, and would punish me." This is the familiar pattern of the Œdipus complex, with its inevitable feeling of conflict and guilt. The third factor in father imago feeling is therefore *guilt*.

D. *Retaliation.*—The wish to retaliate is a consequence of wish-fulfilment frustrated and is accompanied by feelings of envy ("he has got want I want") and jealousy ("I am afraid of his taking from me that which I have"). The wish to *retaliate*, to get even with the father, is the fourth factor in father imago feeling.

E. *Fear.*—With all his invested superiority, power of magic, and omnipotence, added to the feelings of rivalry, frustration, envy, and jealousy, and the wish to retaliate, inevitably goes the feeling of fear. The fear may be of being crushed or lost, but most important of all is the *fear of being punished*. Fear of father is the fear of father's power and father's punishment, and is particularly connected with punishment for the guilty wishes associated with the mother.

These are the primary affects which together make up the pattern of father imago feeling and which become secondarily modified by the actual experience of father or father-surrogate. They are essentially *unconscious* in origin (i.e., merely basic undifferentiated feelings) but they may later become partly rationalised. From this more or less modified primary pattern much that is of importance to individual wish-fulfilment is ultimately obtained, the detail of which will be developed in successive paragraphs.

THE FATHER AND WISH-FULFILMENT.

It is quite obvious that a father figure of this type is going to be an object of fear and conflict, rather than one of wish-fulfilment. He stands badly in need of a compensatory corrective, in order to give stability to this primitive world of desires and feelings. This presents only a slight difficulty, because phantasy is always ready to step in to correct the deficiencies either of reality or a too morbid imagination. The *compensatory father phantasy* must have the following attributes in order to be satisfactory.

(*a*) He must be *personal*, possessed of as much familiar form and substance as any earthly human.

(*b*) He must be *beneficent*, possessed of all loving kindness.

(*c*) I must be his *chosen one*, raised up above all others in a very special and irrefutable relationship of absolute superiority.

(*d*) He must be *omnipotent*, in order to overcome all the doubts and fears of reality and imagination.

With such a compensatory phantasy, it becomes easier to withstand the shocks of experience, the deprivations of reality, and the fears of imagination. It is badly needed, and its real existence will be as stoutly defended.

AFFECTS TRANSFERRED TO ASSOCIATED SIMILARS.

Father-surrogates, for the purpose of modification of father imago feeling, are many. Some, and most probably the first, are older members of the family, perhaps elder brothers, uncles, or any adult in immediate authority. Later, when the boy goes to school, the father-surrogate, and therefore the object of imago feeling, is the schoolmaster. A very important member of this series is the preacher, and others are the authorities of politics and law. The power of the law and of the policeman is thus imago power and is not due so much to any individual prestige, as to this inborn feeling tendency. All those who may be invested with authority at any time, large or small, have become linked with the authority series and the feeling attached to them is a modification of imago feeling. Income-tax collectors and ticket inspectors derive their power and authority from the same source. It is not from themselves but from that which they represent *in us*, that they derive their importance.

A further and most important extension of the father figure is the king, president or tribal head. It is not for himself alone that he is loved and feared, but because unto him has been extended the imago feeling. He is the source of pomp and power, to be loved in his mercy and dreaded in his wrath. The feeling which a people may have about their king is largely independent of his personal character and individuality. This is in some cases fortunate and makes his position stronger and happier than it might otherwise have been. But the retaliatory motive associated with unconscious imago source often becomes transferred to a person in high authority who may be entirely innocent so far as the individual's imaginary sufferings are concerned. These retaliatory and antagonistic forces associated with father imago are liable to find expression in acts of parricide, regicide, and anarchy, by the simple process of the transferred affect, and sometimes to the grave danger of the innocent representative of authority.

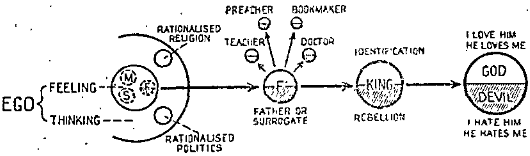
The most important of all derivatives of father imago feeling is the conception of God. There is a tendency to extend the projection of father imago feeling to the utmost, and understanding of this mechanism is of the greatest importance to those who are interested in religion. It is surely most desirable for us to try to make some distinction between our *ideas of God*, which are to a greater or less extent derived from these unconscious sources, and those characteristics which may perhaps belong to the *true objective nature* of God, quite independent of our imago feelings and compensatory wishes. It is possible that our subjective unconscious feelings and rationalisations may coincide at some point with the objective attributes of God, but it is certainly most unlikely that the coincidence will be identical. Father imago feelings, though certainly inspired from one part of their source, are extremely primitive and crude from another, relating in fact to oft-repeated and very earthly experience of mortal parenthood, which is a fact that still waits for general recognition.

Doctors owe much of their authority to imago reactions. They are the modern "medicine-men" to whom the general public turns in search of omnipotence and magic. It may be inferred that the medical profession is not to some extent at least averse to this invested prestige and the added power bestowed upon them by this "transferred affect." It is certain, however, that unconsciousness of the effects of imago reactions leaves much of their work some times misunderstood, and it may be liable to suffer in consequence.

As an illustration of the diversity of objective experience associated with the subjective imago feeling, we may mention that another object to whom it becomes attached is the bookmaker. The connexion may not at first be obvious, but the bookmaker, as an object of wish-fulfilment for these unconscious feelings, in his imaginary benevolent omnipotence may perhaps be placed half-way between the doctor and God!

It will be seen from the above that many of our beliefs and opinions are derived from unconscious sources associated with imago feeling, and their origin is therefore very different from what our subsequent rationalisations would have us believe. A great simplification of our understanding of the many constituent threads and facets of individual life occurs when we link them up with their simple unconscious sources. Take, for example, religious faith, political opinion, and attitude towards authority. These are all found to be allied in their basic feelings in any one individual, and are therefore similar in type. On the right wing is the staunch maintainer of the tradition of the English Church, upholding also the tradition of conservatism and the rightness of things as they are, and the wrongness of all that is new and young. The single pattern to which the "conservative-Church of England" type conforms is that he is anxious to *maintain authority*, the authority of parenthood, the State, the King and God. This pattern will be referred to later as "father indentification," and its exponent will tend to be as authoritative himself as is the authority of that system which he does his utmost to maintain. On the left wing stands the *rebel*, the extreme rebel being communist, atheist, and anarchist, who is *against all government and authority*, and in fact every system which represents law and order. He is against his father and the authority of fatherhood; he is against the king and the authority of the State; and against God and the authority of divine rule. He sweeps them all aside with a single rebellious gesture. There is no paternal authority (hence free love), there is no king (hence varying degrees of republicanism and anarchy), there is no God (hence varying degrees of atheism, rationalism, &c.). All are an example of *unconscious wish-fulfilment* and have no real relation to the domestic, political, religious, or economic circumstances. They are material for psychopathology, not for argument—as is further shown by the amount of undifferentiated "affect" which argument is liable to arouse.

FIG. 2.—*The Split Father Imago: Reactions and Derivations.*



Split Imago: Good and Evil.

If we refer again to those feelings which form components of father imago (Fig. 2) we find two types which are very different in character. These are the feelings, broadly, of *love* and *fear*, and being so different in character they give rise to two entirely different series of derivatives. From the love feeling is derived a conception of a benevolent God full of protective indulgence, and in general a phantasy world of blissful wish-fulfilment closely connected with the primitive conception of "Providence." Providence is a personal, more or less anthropomorphic, entirely beneficent figure which "counts the hairs of our head" and "without whose knowledge no sparrow falls to the ground." "We are his chosen people," as a rule mainly interested in our unique singularity, anticipating with delight our final adoption into eternal life in a heavenly kingdom where we shall live happy ever after. It is all rather like the fairy story which expresses the same phantasy of personal wish-fulfilment and, as in the fairy story, when we read a little further, we find that there is another and quite opposite evil genius to contend against.

God's beneficent omnipotence is frustrated on every hand by the evil and punitive machinations of the devil and his lesser satellites. Again the figure possesses a personal and anthropomorphic detail, and into his character is projected all that we feel of evil and fear. His home is the home of punishment, every sin painted with all the gloomy details of sadistic imagination. He reminds us of the giants and ogres of fairy stories and the threats of the punitive policeman of old-fashioned and ignorant nursery maids.

The Jehovah of the Old Testament was a projection in crude simplicity of the father imago archetype. In him were combined the two conceptions of beneficence and punishment, fear being stronger than love. He was the authority who ruled like the patriarch of old with a rod of iron, claiming an eye for an eye and a tooth for a tooth, and the right to punish "the sins of the fathers unto the third and fourth generation." He was a composite figure, unconscious in origin and latterly tending to be split into a more benevolent God and a more malevolent Devil, the fear aspect becoming progressively less important with the emotional development of the race.

It is interesting and important to trace the same tendency for imago feelings to split into good and evil, in the other derivatives which have been previously mentioned. In general the tendency is first of all to idealise authority (i.e., wish-fulfilment), to feel that now at last the perfect one has been discovered, be he a hero of politics, the army, the stage, or any field in which an individual may be generally admired. The fickleness of the general public is a byword and the popular hero of to-day is despised or forgotten to-morrow. It is as if imago has turned its other face and all ill has taken the place of all good. The hero who yesterday was praised and sung to-day is crucified, and the cruelty and unreason of the change is the measure of its unconscious and infantile emotional source.

The doctor will here be specially interested, as this mechanism closely touches his own professional status. His patients wish to regard him as omnipotent, benevolent, and uniquely interested in themselves, and they may feel at first that he is all that they wish him to be. But suddenly the patient may go elsewhere, and for the slightest excuse is ready to turn and blame unreasonably the authority whom he had previously so enthusiastically praised. Imago thus easily may turn his face to show the other side.

The status in public esteem of the quack is due to the same mechanism. There are many people who characteristically prefer quacks and these will be found on the whole to conform to the rebel type. It is the price that authority has to pay for its imago power, that it is always liable to stimulate the rebel motive, even in its most devoted adherents. However devoted they may be to the medical profession, the general public has a warm place in its heart for the quack for two reasons. The rebels and faddists will like him because he is opposed to authority, and the rest because he claims the powers of magic and omnipotence—and that is what the world is looking for.

This desire on the part of the public for "omnipotence" and "something for nothing," earns the bread and butter, and all that he gets besides, of the bookmaker, and anyone who likes to claim omnipotence is welcome to it, although his day may be shortlived. Disappointment, however, does not always teach the lesson which it should, as is shown in the case of the gambler. As a rule, *the unconscious does not learn much by experience.* The idea of omnipotence may be regarded as one of the most important diagnostic signs of infantile wish-fulfilment and unconscious motivation. There is no evidence for it in objective reality, and yet it is the object of fear and wish-fulfilment. *The fear of, and wish for, omnipotence is one of the most important signs of immaturity and is always associated with that failure of growth which is a cardinal factor in the development of neurosis.*

IMAGO REACTIONS.

It may be stated as an axiom that the *goal of wish-fulfilment of the son is to become the father.* This is true biologically and psychologically. It may be obtained in one of the following three ways: (*a*) identification, (*b*) rebellion, (*c*) growth.

It is perhaps interesting to recognise how these three alternatives are the only methods by which change can be affected, as long as we understand the conception of growth to include both backward as well as forward movement.

Identification is change by means of adaptation of the external form, and is a process of *imitation.* It may be related to the "teaching" method, as distinct from the "educative." The distinction is a very important one, as "teaching" is typically a process of *imitation* by which something which is outside the individual is pushed into him more or less successfully, when there was nothing of the same kind inside him before. The identification method is that primarily emphasised by all authoritarians, whether educational or domestic. It is obviously not sound psychologically, although often economically useful, as it produces the desired result more rapidly and with less expense of effort.

Rebellion, on the other hand, is essentially a change by *revolution.* Unlike identification, which is a change from without inwards, rebellion is a change from within outwards, but it is of the type of turning upside down or inside out. When a penny is turned over on the table it is still the same penny, although it shows a different face to the world. Rebellion and revolution are the most sudden of all changes, but of this method may be said "Plus ça change, plus ça reste." It is the method advocated on the one hand by political revolutionaries, and on the other by a certain type of religious enthusiast, and in the latter case the "conversion" is liable to be psychologically a doubtful one.

The third method of change, *growth*, is the only one which is psychologically desirable. It is change from within outwards, due to the spontaneous creative self-expression of the individual. It is slow but it is sure, because it is based like a pyramid upon the widest possible foundation. It is the only psychological ideal, because it is biologically sound and individually free.

It is now necessary to relate these three methods of change to the conception of imago which has already been described. It is by identification, rebellion, and growth that the son strives to achieve equality with father imago.

IDENTIFICATION.

In this method, the son strives once and for all to be the father in all his power and authority, and seeks to invest himself with magic power. In every way he tries to support authority and at the same time to identify himself with it. The psychological attitude is essentially that expressed in the word "conservative," with all that it means for the maintenance of the *status quo.* In general, the attitude is "My father, right or wrong." The extensions of the father principle all possess the same transferred affect, and the same feeling therefore becomes applied to God, king, country, doctor, teacher, and so on. *Authority in every form and of every kind has to be maintained to the utmost.* The law of the family, of the Church, and of State is the law of external authority, of duty, and of "ought." But herein is *the important factor*—that all these authorities owe their importance to the fact that they represent "me," because I am identified with them.

Father imago feeling is a very important component of conscience, especially for those who are identified with it. It is the standard of conduct, the measure of duty and the "ought" by which they live their lives. But this factor of conscience is very different from the "still small voice." It is liable to be an inexorable argument which shouts, rather than whispers, "I must, I ought." It is important to realise the extent to which it is an internal factor in spite of the fact that it usually has an external reference. It does not matter if the father is dead, or the individual living on a desert island free from the comments of external authority. His authority is always within himself, in his father imago feeling, and it is the inner law that he must obey. The conception which we are outlining of this dictatorial and compulsive internal conscience due to father imago identification is similar to Freud's conception of the *super-ego.*

What is the harm of super-ego and father imago identification? It is largely caused by the feeling of fear which it engenders and the lack of opportunity for individual development which it causes. This is the conscience which "makes cowards of us all" and keeps us children. It is impossible both to grow from within outwards *in* spontaneous development, and to identify oneself with a standard to which one has not attained. The wolf remains the same whether it wears sheep's clothing or not, and "I" remain the same whether "I" am identified with my father or not. There must always be conflict between my own individuality and the authority pose which I have adopted. Father imago identification involves a repression of the opposite mode of change—*i.e.*, rebellion. The spontaneous individual *factor* remains undeveloped, in spite of the assumption of an external form of growth and power. The consequence is that there is a serious gap between "what I feel I am" and "what I feel I ought to be," and *it is* this gap which many psychological mechanisms are required to fill.

The individual who assumes imago authority, who is inexorably strict in principle, and who commands others without understanding the limitation of his own individuality, is no more than a child dressed up in adult clothes. In many ways he shows his immaturity and not the least in that he cannot stand at all without someone to lean on, usually the person of a woman (mother substitute) whose services he can neither dispense with nor appreciate.

REBELLION.

Where identification seeks to preserve the *status quo* and the integrity of external authority, the rebel attitude seeks with a broad sweep to eliminate both history and law. It is as if the world is to start all over again "now," with "me." No past, no law, no father, no church, no God to limit "me." The rebel is as much against the law, according to a single feeling pattern, as the person who is identified with authority is for it. The rebel is a "free thinker" (or so he supposes), an atheist and an anarchist, and has no use for the sanctity of the home, which involves the limitation both of love and power. But the rebel is firmly and inevitably fixed upon the horns of a dilemma of his own creation. He says there *is* no law, there *is* no authority, and in doing so he denies his own right to existence. In striving to eliminate the external power he forgets that he is also eliminating his own internal power and yet it is that same power which he is all the time striving to attain. The rebel has essentially a self-destructive psychology, "cutting off his nose to spite his face," and denying the existence of that which he is at the same time trying to achieve. He does not understand that external and internal authority systems are primarily one and the same and not to be thus easily dissociated. *Authority outside ourselves is only the external reference of our internal wish for the goal of manhood and maturity, and to deny its existence is at the same time to deny our own life's objective.* Hence the destructive and ineffective psychology of the rebel, which is liable to create chaos in its search for the new and perfect system. A point to note about the rebel's psychology is its close affinity with that of the "diehard" Conservative. Both are seekers after ultimate and exclusive power, and in their behaviour and point of view they have much in common in spite of the opposition of their attitudes.

Rebellion is part of the normal psychology of adolescence, and its biological utility, as a passing phase, cannot be denied, but it must essentially be limited to a passing phase. It is the means by which the shackles of authority and the traditions of the past are thrown off, but it must be followed by a period of spontaneous growth. If it remains fixed, the rebel is against everything, and all his objectives must be different from those of the herd. He is against the government, he is the crank and faddist in religion, politics, medicine, and every aspect of life. He can never work in any team and never coöperate except from the motive of his own egotism. If his government should attain power he is still against it, and becomes the government's left-wing, which is a more painful thorn in its flesh than that which any other party could impose. The rebel is the enemy of all that was and is, and his own worst enemy as well. He must grow in individual spontaneity, in coöperation and herd-centricity, or remain for ever outside the pale of social and individual progress.

The essential conflict of the rebel's psychology is that while on the one hand he wishes for completeness of his own authority, on the other he fears, hates, and denies its existence. For the external and internal authority systems are fundamentally one and the same.

THE INFERIORITY COMPLEX.

The pattern of imago feeling is modified by experience of father. What experience of father is going to give rise to the development of what is called the inferiority complex? In general it may be said that any exaggeration of the power and authority of the father, and any exaggeration of the fear and weakness of the individual, will give rise to inferiority complex reactions. The power and authority of the father may be impressed upon the individual in various ways. If the father is one who has unduly identified himself with authority he will tend to use it with all the display and autocracy which he can assume. He is the father whose word is law and whose example is set as the domestic ideal. His is the voice which orders all family councils and his is the dreaded punishment which assumes the omnipotence of Jehovah. He is constantly in the mood of "England expects" (and is himself identified with England) and he is usually expecting far more than he has any right to do. His son (because he is his son and part of his undifferentiated ego) must be, or ought to be, both a double blue and a double first. In this atmosphere the father imago feeling and super-ego are being inflated day by day at the expense of the development of individual spontaneity. An ever-widening gap is growing between "What I feel I ought to be" and "what I feel I am." "Compared with this all-mighty father I feel smaller than I really am." Our measures are all a matter of relativity.

There is another type of father who presents an even more difficult problem, and this is the good and uniformly successful father. In his life he has done well and made good. He may in fact be as near being a good or perfect man as he can possibly be. It is difficult to explain to him that herein lies the danger of his parenthood, because of the difference relatively between all that he is and all that his small children feel themselves to be. He is always right, they are always wrong. He is always good, they are always bad. He is always big, they are always small. It makes no difference that he is really good and successful without any bluffing or self-deception, the problem remains the same, of a relative exaggeration of the already great difference between father and son.

Other problems arise when the father is a drunkard or bully, or when separation or divorce take place between father and mother. This must produce conflicts and crises of great importance in individual feeling. The father must be the ideal and the first measure of wish-fulfilment. If experience of him conflicts with the wish to be like him, stresses and strains of varying intensity are the result.

If we refer to the first diagram of this lecture, we can put the problem of inferiority feeling or self-respect in a very simple ratio, namely:

$$\text{Self-respect} = \frac{S}{F}$$

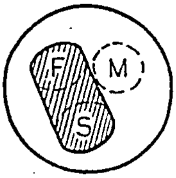
The difference is a relative one. The smaller is S (i.e., my value of myself), or the larger is F (i.e., my feeling about my father), the smaller is the fraction. The consequence is "I feel I ought to be so big and good, but I feel I am so small and bad," and this is the basic conflict of the inferiority complex.

It may be put mathematically. For the purpose of my own individual spontaneity I am in fact 1, but relative to my feeling about father I feel myself to be only ½, and I feel my father's measure of what I ought to be is 1½. I therefore try to be and feel I should be $1\frac{3}{4}$, while all the time I feel I am only $\frac{1}{2}$. This is the psychology of over-compensation with all its mechanisms of conceit, snobbishness, priggishness, bullying, &c. It is based fundamentally on a false value of myself, for I am not really a $\frac{1}{2}$ but 1, and it is not my job really to imitate my father, but to be myself.

THE INDIVIDUAL SOLUTION: GROWTH AND AT-ONE-MENT. (Fig. 3.)

Growth can only proceed by the slow process of evolution, and although the change may sometimes appear to be sudden, if the "conversion" is a true one, it only comes at the end of a long preceding evolutionary phase. Growth must proceed from an inward, individual, and spontaneous development until the authority of maturity is attained, after a long period of effort, failure, disappointment, modification, and learning by experience. There is no royal road or short cut. Identification and rebellion pay for their apparent success with all the necessary props and mechanisms which are required to support it. Growth that is spontaneous and free is a gradual development of the individual source of power and authority, attaining progressive freedom from the feelings of fear, guilt, and inferiority. Ultimately there may come the identification with father imago which this time is true in fact. There is a real "at-one-ment." The individual becomes the standard of his own authority, he expects no criticism other than his own, and fears no punishment other than that which he himself can give. The external and the internal authority have become as one, and they are a unique possession of the individual, derived from his own experience.

FIG. 3.



The biological symbol of development and maturity is fatherhood. "I am the father, now the power and authority are mine." It is not necessarily true that paternity is equivalent to psychological maturity, but it is at any rate a form and symbol of it, which is of great value in increasing the individual's sense of responsibility and self-respect. Much adolescent enthusiasm, which previously spent itself in rebellious politics, has later become transferred to acquiring the power and property of paternity.

The Ideal Rôle of the Father.

From what has been said already, it should be possible to derive some positive suggestions as to how fathers should behave towards their children. There are certain dangers which should be obvious. The first point to realise is that, quite apart from experience of father, the individual possesses certain feeling patterns and potential mechanisms, of the existence of which parents must be consciously aware. It is too easy to make children feel afraid, guilty, and inferior, because these are their primary feeling patterns. But if we are to help them to grow, they can only do so by getting rid of their feelings of fear, guilt, and inferiority, and this they will never do if experience tends to exaggerate rather than minimise these feelings. Fathers who have achieved their own power sense through identification or rebellion will themselves possess a feeling of inferiority, which they will be prone to defend by the assumption of exaggerated authority, thereby inducing inferiority in others, especially their children. This accounts for much destructive criticism on the part of elders who should be betters, but in this respect they certainly are not. Fear, guilt and inferiority, sarcasm, punishment, and the assumption of superior wisdom, are all injurious to the sensitive material of individual character.

A large part of the trouble is due to the crudeness of our measurements and values. Because A happens to be 4 feet taller than B and 30 years older, he is not necessarily superior to B, however much he may feel so. Years and stature are not the true measure of personal superiority, although B will be the first to feel them so, and A will be prone to make as much capital as he can out of the difference. For all his advantage of height and years, the only true way of correlating A and B is to realise that they are both pilgrims on a long road with many turnings and still far from their goal. Measured by the years of racial evolution and history and by the possibilities of psychological development, there is not so much difference after all.

It is absolutely necessary to preserve the integrity of individual values as being personal and unique. There are far too many factors in heredity and personality for any father to have the right to dictate as to what his son should be or do or think. Development must be from within outwards according to individual spontaneity and wish-fulfilment, and this must not be deterred by the assumption on the part of external authority of the right to interference with and dictate to individual freedom. The easiest way to rule is by stimulating feelings of fear, guilt, and inferiority. The best way to rule is by coöperation, equality, and freedom.

It is perfectly true that there are occasions when individual freedom is inclined to behave in a way which deprives others of equal rights or involves undue risk. It is on such occasions that parental responsibility is justified in asserting itself, but even then it must be on the assumption that there is, latent within every individual, a wish towards social coöperation and harmony of mutual although independent adjustment. The father who is wise will not need to come down to his children, because he will realise how nearly they are on a level. He will feel that his influence is best exerted as a coöperative companion, and worst as a punitive patriarch.

ILLUSTRATIVE CASE.

CASE P.—Aged 50. Married. No children. Clergyman. Complained of depression, dissatisfaction with his job, a feeling that he was being neglected and ill-treated, and compulsive phrases that he could not control, such as "There is no God. Damn God. Damn the church."

Family history: He was the youngest of 13 children. His father died when he was six months old. His mother was still living.

History: When his father died, his mother lavished an undue proportion of her affection on her youngest child, whom she called "her Benjamin." He actually shared his mother's bed until he was 7 years old. At this time he stated that he felt an extreme degree of guilt, especially with regard to his elder brothers and uncles. He was terrified of meeting his mother's brothers, because he felt that they were accusing him of something terrible, but he did not know what it was.

At school he was laughed at by his companions as "the boy who slept with his mother," about which he felt both extremely guilty and inferior. At the age of 13 he was asked what he proposed to be. He said he intended either to be a carpenter or to go into the church. (The association of the two at once suggests Messianic identification.) His mother was very anxious that he should go into the church, as she was a very religious woman of extremely high ideals. He accordingly embarked on a university career at a theological college, where he was regarded as being one of the most promising students. In his final year he was expected to get the Gold Medal, for which he had only one serious rival, who was of an entirely different temperament from himself, being famous in the college for standards of behaviour with women and drink which might be thought prejudicial to a successful theological career. However, his rival was awarded the Gold Medal, and he was announced as being second. A week later he was told that there had been some error in the marks and that in fact it should have been a tie, but the authorities had decided not to change the award. He felt what he had always felt—that the authorities were against him and were punishing him for something that he had done wrong. He said, "I felt despised and rejected." He attributed his failure to the fact that during the strain of working for his examination he had suffered from occasional involuntary insemination and that God had punished him for this guilt by depriving him of the award.

His suffering was so extreme that he had a nervous breakdown and was incapacitated from further work for a period of three months. He then went into a parish, but he was never happy in his parish work because, on the one hand, he was terrified of meeting the bishop, as he felt he was always criticising him and he did not know what for, and, on the other, he felt that his congregation were doing the same thing. He said he felt that something was always about to come to light of which he would be ashamed and which would ruin him. He felt at times intense resentment and jealousy, knowing that he was not doing as well as he should and feeling that other people were being preferred whilst his merits were ignored.

At the age of 47 he married a woman who was older than himself and whom he described as being like a sister to him. He was unable to have normal sex relations and this added to his sense of guilt and unhappiness. But before he was married he felt that he could never take this step and again an obsessional phrase came into his mind which he could not explain. It was "I am already married to a woman with 13 children." (To the unconscious the actual ceremony of marriage is not so important as having shared a bed with a woman for a period of seven years.)

The phrases of which he had complained: "Damn God: damn the church: there is no God" crept into his mind involuntarily and he was afraid they would do so when he was in the pulpit. He said that a phrase of General Gordon's was constantly in his mind with slight modification, "Whatever facts shall come to light I *always* shall be blamed." Finally, in pronouncing absolution at the end of the service to his congregation, he said that there was another alteration of what he should say that was always trying to trip his tongue: "Father, have mercy on all our *sons*."

This case is particularly interesting, as it shows the effect of the lack of experience of a real father on the unmodified development of father imago pattern and mechanisms. The mechanisms were free to develop without modification, and this again was exaggerated by the extremely unwise conduct of his mother in permitting him so much emotional intimacy with her. He developed both the wish to be the chosen one, perfect and immaculate, and also a terror of the punitive aspect of unjust authority. It was not to be wondered at that in spite of quite exceptional ability and goodwill, his life was largely ruined by the emotional conflict derived from experiences in infancy and early childhood, over which he had no responsibility.

SPECIAL ARTICLES

YELLOW FEVER AND AIR ROUTES.

A NOTE has been presented by Colonel S. P. James, chairman of the Yellow Fever Commission, to the Office International d'Hygiène Publique on the results of recent researches in the prevention of the spread of yellow fever. The full text is published in the *Bulletin Mensuel* for December, 1930, and the object of the writer is to dwell on the important relation which new knowledge bears to the manner in which yellow fever should be dealt with under the forthcoming Aerial Sanitary Convention.

Methods of Spread.

This matter he considered under three headings: (1) notification and diagnosis; (2) the causal agent and its infectivity to man and to mosquitoes; and (3) the course and duration of infectivity in human cases and in mosquitoes. Colonel James writes:—

1. *Notification and diagnosis.*—According to Article 1 of the International Sanitary Convention of 1926 and Article 14 of the draft of the proposed Aerial Sanitary Convention, the notification of a recognised case of yellow fever is the signal for taking measures to prevent spread of the disease. But a well-confirmed result of recent research is that some infective cases of yellow fever present such slight and atypical symptoms that it is impossible to recognise them.

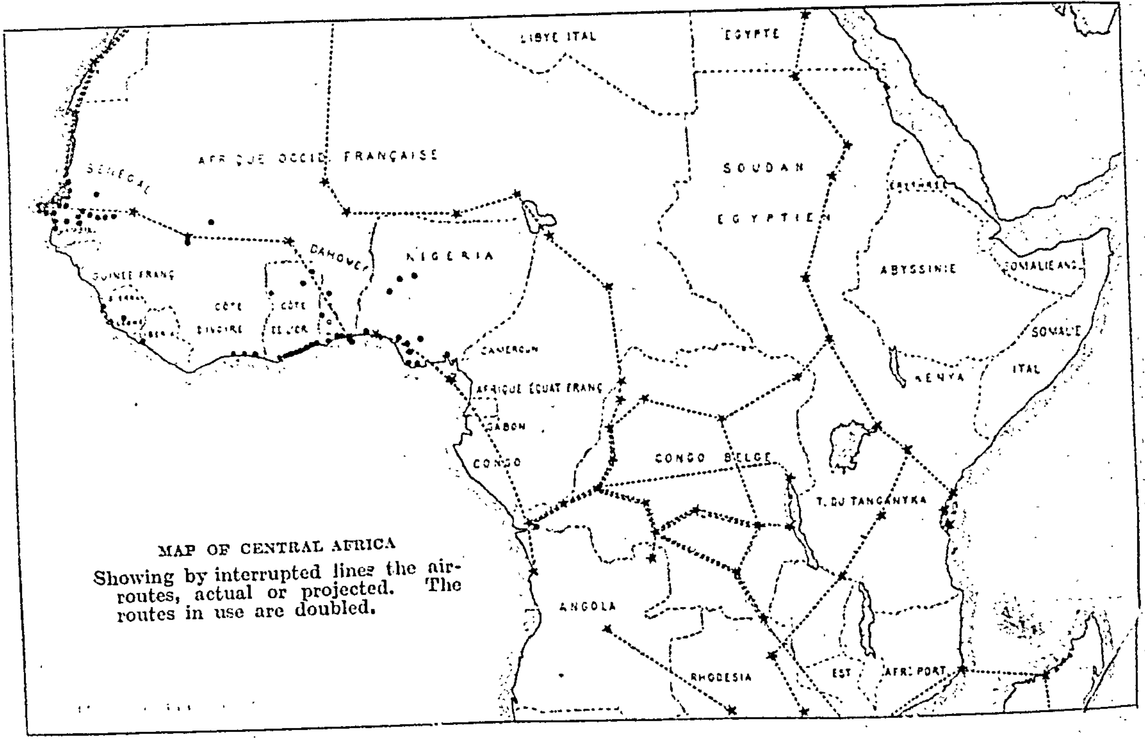
2. *The causal agent and its infectivity to man and to mosquitoes.*—At the time of the International Sanitary Conference of 1926 it was believed that the specific germ of yellow fever had been discovered. Now we have to admit that we know so little about the causal agent that we have to refer to it under the general term "virus." This alone is sufficient to require that prophylactic regulations should be placed in a different category and should be of a different kind from those of plague and cholera which, even in the absence of clinical cases, can be recognised by their specific germs. As yet we do not know much about the "virus" of yellow fever, but what we do know makes it necessary to change existing views on the mode of transmission and the infectivity of the disease. One of the most important recent experiences is that persons may become infected from patients without any intervention of mosquitoes. This has been proved recently in England by the occurrence of cases in circumstances where the intervention of mosquitoes could be entirely excluded. In these cases it was impossible to decide exactly how infection was acquired, but it was believed that there must have been contamination of the fingers or hands with blood containing the virus in sufficient quantity to penetrate the unbroken skin. An analogous mode of transmission between mosquitoes without the intervention of a human host seems also to have been proved. It appears that the virus can survive in the excreta of mosquitoes and that other mosquitoes can become infected by direct contact with these excreta or with the mosquitoes themselves. If this is so it explains why an area may continue to remain infective for a long time even in the absence of human cases of the disease. Another new finding which is important in relation to prophylactic measures is that other mosquitoes than *Aedes ægypti* have been incriminated as transmitters of the infection.

3. *Course and duration of infectivity in human cases and in mosquitoes.*—It has been proved in laboratory work with monkeys that the blood is infective during the incubation period of the disease as well as during the early period of the attack, and it is considered on theoretical grounds that the same must be true of human cases. The blood of human cases ceases to be infective within three days of the commencement of febrile symptoms, but exceptionally its infectivity persists until the fourth day. As the loss of infectivity is believed to be due to the development of immune bodies rather than to the disappearance of the virus, the blood is most infective during the earliest stages of the disease before immune bodies have been formed. These findings are important in connexion with regulations for preventing mosquitoes having access to yellow fever patients. It is very probable that most patients have ceased to be infective to mosquitoes by the time the nature of the disease is recognised and that most danger arises from persons in the incubation period.

The bodies of mosquitoes which have bitten an infective patient are infective from that time onwards, but the period which elapses before they can convey infection by their bites (the so-called "extrinsic incubation period") depends on the temperature at which they are kept. At 28° C. their bites may be infective on the ninth day. The period may be prolonged indefinitely at low temperatures; mosquitoes which after ingesting virus have been kept a long time at temperatures of between 10° C. and 15° C. have subsequently become capable of conveying the infection by their bites when the temperature was raised to 28° C. An infective mosquito usually remains infective for the whole of its life. Prof. Hindle records a fatal infection caused by the bite of one mosquito 118 days after it became infective. The use of prophylactic vaccine appears to be less hopeful than was formerly thought.

Rules for Air Routes.

Accompanying Colonel James's communication are three maps recording the names of places from



MAP OF CENTRAL AFRICA

Showing by interrupted lines the air-routes, actual or projected. The routes in use are doubled.

which cases of yellow fever have been recorded at any time during the last 20 years, but in the majority of these localities no case has been notified since 1927 in Africa and 1921 in the Americas. Upon these maps the air-routes are given as they exist or are projected in Central Africa and Central and South America. On the map of Central Africa here reproduced are indicated with a star the principal localities situated on air routes (actual or projected), and with a black dot those in which yellow fever has occurred. Colonel James concludes that the new knowledge indicates the need for more stringent prophylactic rules especially now that flight across the world is becoming common and bringing with it a new anxiety to public officials. This possibility of the introduction of disease, especially yellow fever, by passengers from air-ships was considered by the Permanent Committee of the International Office of Public Hygiene in May of last year (see THE LANCET, 1930, ii., 304), and Colonel James records with approval Prof. Ricardo Jorge's proposal for a systematic field inquiry as to whether yellow fever is still endemic in the particular areas marked on the maps. For, if so, when an aerial route passes through any of these places adequate protection to avoid risks should be taken. But, as Colonel James points out, the actions will have to be taken against a disease or an infection about which our knowledge is incomplete, although it seems to be a disease of geographical distribution.

SANITARY PRECAUTIONS.

In the same bulletin a note is published from Mr. H. Le Prince, senior sanitary engineer in the United States Public Service, dealing with the measures which can prevent the propagation of yellow fever. In the summarised conclusions he finds that the most useful measures against yellow fever are the prompt notification of suspect cases; the surveillance of cisterns, tanks, and culverts so that mosquito larvæ can be destroyed promptly; and a minute daily inspection of all the probable breeding-places, with, where the water is not drinking water, treatment with the appropriate larvicide.

MEDICINE AND THE LAW.

The New Cremation Regulations.

DISPOSAL of the bodies of the dead by means of cremation has had to contend with both prejudice and indifference. It is some evidence of progress that in 1927 regulations were at last made under the 1902 Act for the purpose of cremations in Scotland, and that in the last few months the 1920 regulations for England and Wales have been superseded by fresh directions which seem to simplify the necessary preliminaries. The new regulations, issued by the Home Office at the end of October, came into force on Dec. 9th, after having been laid before Parliament for the statutory period of 40 days. They make several changes. Provision now exists for permitting cremation where the coroner has used his power (under Section 21 of the Coroners (Amendment) Act, 1926) of directing a post-mortem examination without inquest, if he is satisfied that no inquest need be held and if he has sent the registrar his certificate of the cause of death. The procedure where an inquest has been held and the coroner gives his certificate on Form E, is now supplemented by a proviso that, if death has occurred in connexion with an industrial, railway, flying, or road accident and the coroner has adjourned the inquest with a view to investigation of the causes of the accident, he may give a certificate in a modified Form E, if satisfied that death was due to an accident, without waiting for the completion of the adjourned inquest. The coroner, therefore, now uses Form E for three contingencies—where he has directed a post-mortem examination without inquest, where he has held his inquest and certifies the result, and where he has adjourned his inquest as already stated.

The normal preliminaries before cremation remain, the two medical certificates, one (Form B) given by the registered medical practitioner who has attended the deceased during his last illness and who can certify definitely as to the cause of death, and the other (Form C) the confirmatory medical certificate given by another practitioner. Here the Home Office has relaxed its requirements. The 1920 regulations, in this respect repeating the regulations of 1903, required that the confirmatory certificate—if not given by the Medical Referee—should be given by a practitioner of five years' standing, possessing one of the following three qualifications: (1) appointment for the purpose by the cremation authority; (2) appointment as medical officer of health, police surgeon, certifying surgeon under the Factory Act, or medical referee under the Workmen's Compensation Act; or (3) appointment as physician or surgeon in a public general hospital containing not less than 50 beds. In future no special qualification will be needed. The confirmatory medical certificate (Form C) can now be given by any registered medical practitioner of five years' standing, provided that he is not a relative of the deceased or a relative or partner of the doctor who has given the medical attendant's certificate in Form B. Among less important changes is one which apparently empowers the Home Office to appoint Medical Referees and Deputy Medical Referees under the Cremation Act on the nomination of the cremation authority instead of leaving it to the authority to appoint and notify the Home Office. As no cremation can take place except upon the written authority of the Medical Referee, whose important powers and duties are elaborated in the regulations, it is essential to fill these posts with practitioners of special experience and qualifications. Regulation 16, dealing with the disposition of ashes, provides (as before) that they shall be given to the person who applied for the cremation if he so desires; if not, in the absence of any special arrangement, the authority is to inter them decently in a burial ground or in ground reserved for the purpose at the crematorium. The authority may now scatter the ashes instead of burying them in its ground.

It is perhaps of professional interest to mention minor variations in the new forms which the medical practitioner must sign. Form B used to direct him to "specify the disease, injury, &c., and if possible distinguish the primary from the secondary cause as in the death certificate"; he was also formerly asked to say "what was its duration in years, months, or days," and whether any other cause contributed to or accelerated death. In slightly different words he is now told to state the cause of death, primary and secondary: (1) the immediate cause, morbid conditions, if any, giving rise to immediate cause (stated in order proceeding backwards from immediate cause), and (2) other morbid conditions (if important) contributing to death but not related to immediate cause. To question 18 on Form B, which asked him "have you given the certificate required for registration of death," there are now added the words, "if not, who has?" Finally, the general words at the end of the certificate have now been enlarged. The signatory, while certifying that the answers given are true and accurate to the best of his knowledge and belief, must now also certify in a new formula that "I know of no reasonable cause to suspect that the deceased died either a violent or an unnatural death or a sudden death of which the cause is unknown or died in such place or circumstances as to require an inquest in pursuance of any Act." This same formula is repeated at the end of Form C (the confirmatory medical certificate). Medical practitioners, if asked to sign Form B or Form C, should make sure that they are not using the obsolete forms of certificate prescribed by the 1920 regulations now superseded.

It is unnecessary to emphasise the duty to use scrupulous care in completing these certificates under the Cremation Act. If the public has any misgivings over the widening of the authority to sign Form C, confidence will not be established unless every practitioner performs his task with a proper sense of responsibility. Doubtless there are citizens who look suspiciously upon cremation as a possible method by which crime and foul play can be concealed. They should be reassured. The last step the poisoner or other criminal would wish to take is to submit his victim's body forthwith to the special investigations and detailed certification which the Home Office regulations prescribe.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

EDINBURGH HOSPITAL PROBLEM.

THE Edinburgh municipal policy for hospitals is now becoming more definite, and the question of the municipal hospital is being studied by the University Court. The Royal Colleges will naturally wish to be considered, and the interests of the Royal Infirmary as a voluntary hospital as well as an integral part of both university and extra-mural medical schools will need careful discussion. On the other hand, the primary problem facing the municipality is how to provide general hospital accommodation for the large mass of patients forced upon them by the transfer of poor-law hospitals, and how to meet the ever-increasing demand for hospital treatment. At the recent meeting of the Royal Infirmary it was stated that the waiting-list was the highest tribute to the efficiency of the hospital. But the waiting-list last year was 2851, and the municipality has to remember that it is the public body charged with the duty of providing for the sick. In Aberdeen, I am informed, the new professor of medicine has been made visiting physician to the new municipal hospital, and it is understood that the professors of surgery and midwifery have also been appointed. The Aberdeen problem is very largely solved, but the Edinburgh problem is much more complicated. Meanwhile, the question of paying hospitals is being steadily canvassed both in Edinburgh and elsewhere. Even in this matter the municipalities and county councils are in a strong position, for they have power to recover payment for all cases of sickness other than infectious diseases, and they can make arrangements either by themselves or in concert with the voluntary hospitals.

ALCOHOL AND THE HUMAN BODY.

In a recent lecture Prof. F. A. E. Crew said that biological experimentation had shown that alcohol could wipe out the relatively weak germ cell and embryo, thus leading ultimately to the improvement of the stock. But the experiments which had revealed these facts had shown very little, if anything, of the effects of alcohol upon the mental character, and these were much more important socially than were the physical. Up till now most studies had approached the problems of the effect of alcohol from the angle of sociology, or of clinical medicine, but those who were interested in the future as well as in the present recognised clearly that the racial effects were no less important. It was to be hoped that in the future biologists might be encouraged to add their contributions to the construction of policies dealing with the grave subject of alcohol.

EDINBURGH ROYAL INFIRMARY.

The Edinburgh Royal Infirmary has been duly recognised and approved by the National Radium Commission as a national radium centre for Edinburgh and the south-east of Scotland. Supplies of radium are now available on loan from the Commission without the obligation to create a special institute.

Before the war the expenditure of the Infirmary was about £60,000 a year. Last year it was about £152,000. Of that amount, roughly 20 per cent. came from interest on the institution's capital, 47 per cent. from voluntary contributions, and 11 per cent. from maintenance of patients and revenue from students' fees and other sources, leaving 22 per cent. of the ordinary outlay to be met from the year's legacies. Last year the deficiency on the ordinary account amounted to £33,000. The average cost per occupied bed last year was £155 16*s.* 4*d.*, an increase of £5 10*s.* 5*d.* on the preceding year.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

CHILDREN'S HOLIDAYS.

Dr. Paetsch, head of the municipal health office of Bielefeld, Westphalia, points out that in considering school holidays one must distinguish between children from big cities and those from country places. Children living in cities are exposed to the noise of streets and the unrest of tenement houses which never ceases even at night. Their leisure is often spent in badly ventilated places without a possibility of playing in the open, and unfortunately some parents take their children to restaurants and coffee-houses, where they sit in smoky rooms. Children coming from this environment must have the holidays as much as possible in fresh air with at least ten hours of sleep; after lunch every day they should have an hour or two resting. They should go to bed at 8 P.M. and ought not to be allowed to read in bed.

For younger children a stay at the seashore is ideal, but prolonged sea-bathing and a compulsory hardening must be avoided. A rapid change of habits is prejudicial. Thus it often happens that a child which at home seldom enjoys the sun is exposed entirely naked for several hours the day after his arrival. Severe burns are often the sequel. For older children games are recommended; but weakly girls and boys must not be allowed to take part in sports with the stronger children because their physical inferiority may easily lead to overstrain.

Children from the country and from smaller towns may spend their holidays otherwise, for they enjoy fresh air all the year round. Their parents ought not to employ them in agricultural work, especially in the hot season when they are often overworked. They may be sent for their holidays to the cities, where, under sensible control, they can enjoy the amenities of urban life.

TESTING OF THERMOMETERS.

By a law of 1929 every thermometer destined for medical purposes must be tested and the test must be confirmed by the stamp of the Official Physico-Technical Institute of Germany. The stamp is affixed only if the difference between the tested and the standard thermometer is not more than 0·1° Celsius at a reading of 37° and 40°. Between 41° and 42° a difference of 0·12° Celsius is allowed. The fee for the test is fixed at the equivalent of 1*d.*; if additional tests are desired by the manufacturer an additional fee must be paid.

MEDICAL WOMEN.

The number of women medical students has risen from 555 in 1911 to 3428 in the last winter term, while the number of male students has in that period increased by only 50 per cent. Seventeen per cent. of all the women university students study medicine, and the majority of girl students matriculate at Berlin and at Munich. In 1909 there were 82 qualified medical women; in 1927 the number had risen to 1739; and in 1929 to 2562, of whom 476 have settled in Berlin.

ASPHYXIA IN A LAUNDRY.

In the laundry department of a Berlin linen factory some women working with ironing machines suddenly fell ill and became unconscious; by and by 37 of them showed the same symptoms. The fire brigade and the municipal first-aid station applied oxygen, so that 30 of the women could be sent home, but the remaining seven were so ill that they had to go to hospital. The factory is equipped with the most modern machinery, and the room was large and well ventilated. But the factory had been closed for four days during the Christmas holidays and the room being rather cold in consequence the exhaust ventilation plant was temporarily stopped, with the consequences described.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

CHEST SURGERY IN THE SANATORIUM.

How similar are surgical and medical problems in the most dissimilar of countries! In France, England, Norway, and doubtless in many other countries, physicians and surgeons responsible for the welfare of consumptives requiring operations on the chest have deplored the geographical fact that sanatoriums are in the country and surgical clinics in the smokiest of towns. Dr. L. Bérard and Dr. F. Dumarest have answered the question: Should the sanatorium patient go to the surgical clinic, or the surgeon establish himself in the sanatorium, in favour of the latter alternative. For three years they have practised thoracic surgery at Hauteville in sanatorium surroundings, and in a recent communication made to the Academy of Medicine they have given some impressive figures. Forty-eight thoracectomies have been done on 28 patients without a single operative fatality or death within six months of the operation. Of the five deaths occurring more than six months after operation, three could be traced to operative interventions elsewhere. Among the 28 thoracoplasties there were four which were called for on account of pulmonary perforations connected with the pleuræ. In two of these cases death followed six and ten months respectively after the operation; the other two patients could be regarded as clinically cured. In 24 other cases thoracoplasties were followed only in three cases by death eight months and one year respectively after the operation. It was found that resection of the first six or seven ribs (thoracectomy superior) was sufficient to induce an effective collapse when the disease was limited to the upper lobe; this course did not endanger the lower lobe, the conditions established being similar to those of a selective pneumothorax. When the disease had not involved the whole of the upper lobe and was strictly apical, even this limited superior thoracectomy was considered unnecessarily radical, and an apicolysis was substituted for it. Altogether 138 phrenicectomies were performed. Some of the patients were lost sight of, and among the 118 traced six months to three years later, there were 20 deaths from pulmonary tuberculosis. In many cases early successes were followed by renewed extension of disease or by recovery of its mobility by the diaphragm. While the disease progressed in 42 cases, in spite of effective anatomical changes induced by the operation, there were 55 cases in which the clinical results were much greater than the anatomical changes seemed to warrant. No operative or post-operative accidents occurred, and the general conclusion is drawn that while the results of phrenicectomy are variable, and it may provoke extension of the disease, this operation deserves frequent employment, the more so because it may pave the way for more radical measures. Even by itself it may, almost in a trice, convert a progressive into a regressive lesion, put an end to dangerous hæmoptyses, and promote the healing of even large, ulcerating lesions. But the operation is safest when performed at a stage of comparative stabilisation of the disease.

B C G VACCINATION IN A PROVINCIAL TOWN.

At Béziers, the late Dr. Henri Roure organised in November, 1926, a system of B C G vaccination with the help of the *Bureau de Bienfaisance* and the local authorities. The machinery of this system was as follows: A nurse, employed by the bureau, went every day to the offices where births had been registered the day before. She then visited all the parents and recommended B C G vaccination which, according to the wishes of the family, was carried out by herself, the doctor in charge, or the midwife. No charge was made for this vaccination whatever the financial status of the family. Of 139 babies born in the last two months of 1926, 99, or 71·4 per cent., were vaccinated. This percentage rose to 80·1 in 1927 (741 births, 594 vaccinations), and it fell to 73·6 in 1928 (796 births, 586 vaccinations).

HISTORY OF MEDICINE.

At a meeting of the permanent committee of the International Society of the History of Medicine, held on Dec. 20th, Paraguay and Ecuador were admitted to the group, the 22 members of which include Great Britain, Germany, and Italy. With reference to the last international congress held in Rome, and Prof. Szumowski's report on the teaching of the history of medicine in the universities, it was decided to send the report to every nation with a view to such teaching becoming officially adopted. Subjects for the next congress, which will be held in Bucharest in 1933, are to be chosen from among the following suggestions: (1) the spirit of medicine in the sixteenth century; (2) the internationalisation of medicine in the nineteenth century; (3) the evolution of medicine in the Balkan countries; (4) the progress of surgery from the eighteenth to the nineteenth century; (5) medical navigators and exotic pathology.

FORTHCOMING MEDICAL EVENTS.

The following medical events are announced to take place in France during the present year:—

March 30th–April 2nd: VIIe Congrès National de la Tuberculose, Bordeaux.
March: XIIe Congrès National d'Orthodontie, Valence.
March: Réunion Hydrologique et Climatologique, Montpellier.
April 12th: XXXVe Congrès des Médecins Aliénistes et Neurologistes de France et des Pays de Langue Française. Bordeaux.
May 4th, 5th, and 6th: XVIe Congrès de Médecine Légale de Langue Française, Paris.
May 24th–25th: Congrès de Lithiase Urinaire, Vittel.
May: VIe Congrès International de Thalassothérapie, Berck-Plage (Pas-de-Calais).
July 20th–25th: LVe Congrès de l'Association pour l'Avancement des Sciences, Nancy.
July 22nd–31st: Journées Médicales Coloniales de Paris.
July 27th–31st: IIIe Congrès International de Radiologie, Paris.
August 3rd–8th: VIIIe Congrès Dentaire International, Paris.
End of September: VIIe Congrès des Pédiatres de Langue Française, Strasbourg.
Oct. 1st, 2nd, and 3rd: Congrès de l'Association des Gynécologues et Obstétriciens de Langue Française, Bordeaux.
Oct. 5th: XIe Congrès de l'Association Française de Chirurgie, Paris.
Oct. 6th: XXXIe Congrès Français d'Urologie, Paris.
Oct. 9th: IIe Réunion Annuelle de la Société Française d'Orthopédie, Paris.
Oct. 11th–18th: IIe Congrès International de Pathologie Comparée, Paris.
Oct. 19th: Congrès Français d'Oto-Rhino-Laryngologie, Paris.
October: XXIIIe Congrès d'Hygiène, Paris.
October: XIIe Congrès des Médecins et des Chirurgiens des Hopitaux, Paris.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 24TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 272 (last week 187), scarlet fever, 1793; diphtheria, 1543; enteric fever, 37; pneumonia, 2058; puerperal fever, 63; puerperal pyrexia, 125; cerebro-spinal fever, 20; acute poliomyelitis, 4; acute polio-encephalitis, 2; encephalitis lethargica, 16; dysentery, 7; ophthalmia neonatorum, 86. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 27th–28th was as follows: Small-pox, 255 under treatment, 1 under observation (last week 225 and 8 respectively); scarlet fever, 1501; diphtheria, 1950; enteric fever, 11; measles, 101; whooping-cough, 197; puerperal fever, 33 (plus 14 babies); encephalitis lethargica, 121; poliomyelitis, 2; "other diseases," 106. At St. Margaret's Hospital there were 13 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (2) from enteric fever, 73 (0) from measles, 8 (1) from scarlet fever, 30 (4) from whooping-cough, 53 (10) from diphtheria, 58 (13) from diarrhœa and enteritis under two years, and 242 (47) from influenza. The figures in parentheses are those for London itself.

The fatal case of enteric fever outside London occurred at Tynemouth. Thirty fatal cases of measles were reported from Liverpool, 9 from Bristol, 7 from Hull, and 5 from Tynemouth. Liverpool reported 4 deaths from whooping-cough; East Ham, Birmingham, Manchester, and Middlesbrough each 2. Diphtheria claimed 10 victims at Liverpool, 4 at Leeds. Diarrhœa was credited with 9 deaths at Liverpool, 4 each at Birmingham, Manchester, and Leeds. The 195 fatal cases of influenza outside London are scattered over 61 great towns; 68 deaths were reported from Liverpool, 6 each from Birmingham, Bolton, and Manchester, 5 each from Croydon and Sunderland. No deaths from small-pox were reported for the month of December last outside the great towns.

The number of stillbirths notified during the week was 270 (corresponding to a rate of 40 per 1000 births), including 39 in London.

THE SERVICES

HEALTH OF THE NAVY IN 1929.

THE statistical report of the health of the navy for the year 1929 has just been issued,[1] eight months after its predecessor—a notable achievement. Its price has been reduced by a half.

The total force was 86,240 (90,820 in the previous year); the fresh cases were, per 1000, 482·03 (445·99); the invalids, 14·30 (11·41); and the deaths, 2·94 (2·22); all showing increases for this year. The chief cause of loss of service was local injury and wounding, then acute gonorrhœa, followed by catarrh. The chief causes of invaliding were tuberculosis, pulmonary, 228 (119); diseases of the eye, 170 (214); diseases of the ear, 132 (111); and injuries, 105 (69). Deaths were 254 (202), the chief causes being pneumonia, 21 (15); tuberculosis, pulmonary, 19 (17); diseases of the intestines, 15 (15); meningococcal infection, 12 (2); "other respiratory diseases," 10 (6); and from all injuries, 92 (67), of which 43 from drowning. There were 9 (14) suicides. Successful vaccinations increased by some 3000. Enteric group, 5 (7) cases; influenza, increased as in the army, 1661 (468), and chiefly on the home station and in the Atlantic Fleet, also on the Mediterranean station. Malarial cases were increased, especially in the eastern Mediterranean, Basidu, Bombay, and Lagos; Mediterranean fever, 14 cases, 7 arising at Malta; meningococcal infection, 43 (1), 37 of the cases were on the home station, 26 from the general depôt at Chatham; of these two, arising when the patients were on leave, proved fatal; in one case the patient's throat swab prior to proceeding on leave was negative. One case from a ship in the Mediterranean was fatal. The largest number of cases of pneumonia (26) came from the Chatham depôt, which also gave most cases of rheumatic fever. Two cases of small-pox occurred at Shanghai, though the patients had been vaccinated within five years. There was a considerable increase in pulmonary tuberculosis this year, 240 (153), but a decrease in tuberculosis, non-pulmonary, 20 (29); the ratio in most of the larger groups is increased, and the liability seems, as in the army, to increase with age and service. Venereal disease cases are increased, 73·74 (67·96), but the number daily under treatment is reduced.

It is claimed that there has been a slight improvement in the dental condition of the personnel, but 73 per cent. of men on draft to seagoing ships were unfit, as against 71 in 1928. Scabies cases were 11·44 (13·82), an improvement, but they took longer (7·32 days each) to cure. It is disappointing to see that, in addition to a ratio of 206·78 per 1000 from infectious disease, there was a ratio of 810·86 from disease of the respiratory system in the *St. Vincent* training ship, though it is pleasant to note that no cases of pulmonary tuberculosis appeared in the training service this year. There is still no report on the cadets at Dartmouth.

This report, prepared as it has been in eight months, is making up leeway. Next year, when there is more time, we may hope that more interest may be allowed to creep into the station reports and the summary of the Director-General. It may not occur to the Admiralty, but the medical reports of the navy have been, at times, of considerable professional interest. Thus there was in 1870 an epidemic of cholera at Zanzibar, and when it is asked whence that came it will be answered that the earliest mention of this particular epidemic was made by the medical officer of H.M.S. *Penguin*, which ship, cruising in the Gulf of Aden in the early part of 1865, took two dhows with slaves, amongst whom were several with cholera. They were the only infected dhows then reported, and that cholera epidemic travelled to Mecca and was carried to Africa, passed through Abyssinia, Somaliland, &c., in four years, through countries that now aeroplanes cross in three days, to reach Zanzibar, and the time could not have been fixed or the origin have been determined but for the report from the assistant surgeon of the *Penguin*, published in the statistical report for 1865.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. H. C. Devas is placed on the retd. list at his own request with rank of Surg.-Capt.

Surg. Lt. R. B. McVicker to be Surg. Lt.-Comdr.

S. K. Foster, A. H. O'Malley, and J. M. T. Reese to be Surg. Lts.

The following appts. have been made:—Surg.-Comdr. I. Wylie to *Ganges*, for R.N. Sick Quarters; L. W. Gemm to *Cornwall;* and P. N. Button to *Vindictive*. Surg. Lt.-Comdr. M. Barton to *Pembroke*, for R.M. Infirmary, Deal. Surg. Lts. H. D. Plunkett to *Resolution*, and T. Holgate (D.) to *Cornwall*.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lts. A. C. Howard and M. G. Strath to *Victory*, for R.N. *Hospital, Haslar*.

ROYAL ARMY MEDICAL CORPS.

Col. B. B. Burke, late R.A.M.C., retires on retd. pay on account of ill-health.

Lt.-Col. (temp. Col.) O. Ievers, from R.A.M.C., to be Col. vice Col. Burke.

Lt.-Col. H. H. J. Fawcett to be temp. Col.

Maj. and Bt. Lt.-Col. (temp. Lt.-Col.) A. D. Fraser to be Lt.-Col., vice Lt.-Col. (temp. Col.) Ievers.

Maj. J. E. M. Boyd to be temp. Lt.-Col.

Maj. W. T. Graham retires on retd. pay.

Maj. P. Hayes is placed on retd. pay.

The undermentioned Lts. to be Capts.: Lt. D. B. O'Sullivan-Beare, L. R. S. MacFarlane, M. F. N. Griffi H. A. Ferguson, de L. Carey, and M. G. de L'I. Stur

D. P. F. Mulvany is granted a temp. commn. in the rank of Lt.

ARMY DENTAL CORPS.

Capt. J. L. Craig is placed on the half-pay list, on account of ill-health.

Lt. F. J. McCarthy, temp. Dental Surg., Gen. List, to be Lt. (on prob.).

TERRITORIAL ARMY.

J. M. Lees (late Cadet, Rugby Sch. Contgt., Jun. Div. O.T.C.) to be Lt.

ROYAL AIR FORCE.

Dental Branch.—The undermentioned Squadron Leaders, R.A.F., Majors, Army Dental Corps, relinquish their temporary commissions on return to Army duty: A. E. Macdonald and H. O. Sumerling.

INDIAN MEDICAL SERVICE.

Col. W. V. Coppinger to be Maj.-Gen.

COLONIAL APPOINTMENTS.

Lt.-Col. P. Hope-Falkner, R.A.M.C., M.O.H., St. Kitts-Nevis; Dr. J. P. O'Mahony, Supernumerary Medical Officer, Leeward Islands; Dr. W. A. Burnett, Medical Officer, W. African Medical Staff, Nigeria; Dr. R. J. Krogh and Dr. E. Siung, Government Medical Officers, Trinidad; Dr. A. W. Williams, Medical Officer, Uganda; Dr. F. E. Camps, Dr. J. A. K. Fitzgerald, Dr. E. R. Gould and Dr. K. T. Moir Medical Officers, W. African Medical Staff; Dr. H. S. de Boer to be Deputy Director of Sanitary Services, Northern Rhodesia, and Dr. C. F. Lassalle to be Deputy Surgeon-General and Medical Inspector of Health, Trinidad.

A LINCOLNSHIRE SMALL-POX HOSPITAL.—Application is being made to the Ministry of Health for a provisional order for the formation of a joint board representative of the whole of Lindsey, with the boroughs of Lincoln and Grimsby, for the administration of a small-pox hospital on Osgodby Moor. The hospital, which was built by the Caistor rural council, stands on lonely moorland surrounded by trees. It will have to be enlarged and the water-supply improved.

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[1] H.M. Stationery Office. Pp. 153. 2s. 6*d*.

CORRESPONDENCE

THE STRUCTURE OF NEUROSIS.

To the Editor of THE LANCET.

SIR,—In your issue of Jan. 24th (p. 217) Dr. Parkes Weber raises the question of the factors which underlie the behaviour-changes which are found to follow an attack of epidemic encephalitis. The precise meaning of the question, as stated, is not altogether clear, but I take it that by the parenthetic qualification, "indirectly," Dr. Parkes Weber means that the post-encephalitic recognises in himself the existence of a physical damage, and unconsciously reacts to this recognition by setting up a defence-mechanism against it and against the sense of inferiority which arises therefrom. I believe, however, that experience shows that, speaking generally, those cases which exhibit the most marked behaviour-changes show the least marked physical sequelæ, and *vice versa*.

I venture to suggest that a more plausible explanation is that the changed behaviour is the evidence of a regression to a more infantile type of behaviour-response to stimuli—in other words, there is a reduction of the epicritic (or, as Sir Herbert Parsons terms it, the syncritic) control to a protopathic level with its "all or none" type of reaction. The patient regresses to that early period in the development of his personality, when he is, to use Prof. Lloyd Morgan's phrase, a "self of enjoyment" in which there is no distinction between *meum* and *tuum*, before the capacity for self-criticism has emerged, and while the reaction to emotional stress is still uncontrolled. The frequency with which such a patient develops habits of thieving, lying, and fantasy-building seems to support this view.

In his book, "The Measurement of Emotion," Mr. Whateley Smith shows that alcohol acts in the same way by suppressing the syncritic and epicritic control, thus reducing the participant to a protopathic level until in extreme cases even this level is passed and unconsciousness results. It may perhaps be added that since the severe epidemic in 1894 very few of the recognised cases of encephalitis have shown those characteristic behaviour-changes which previously had been reported from many parts of the world.

I am, Sir, yours faithfully,

Birmingham, Jan. 31st, 1931. G. A. AUDEN.

DIET IN DIABETES.

To the Editor of THE LANCET.

SIR,—Your annotation of Jan. 17th (p. 142) summarises the accumulating experience in the dieting of diabetics. For several years Dr. A. P. Thomson has been applying the principle of the relatively high carbohydrate content diet. The value has been demonstrated in many of the 700 out-patients in his diabetes clinic at the General Hospital, Birmingham. Patients attend at suitable long or short intervals and on each attendance a blood-sugar estimation is made; Rothera's test for ketosis also is frequently carried out. Such tests together with the clinical appraisement at regular intervals allow a fairly trustworthy impression of the value of the principle to be made.

A table of "rations," which are 10 g. carbohydrate equivalents of foods, having a high carbohydrate content—e.g., bread ½ oz.—forms the basis of most of our dieting instructions. The two diets chiefly used are: (1) restricted protein (P) and fat (F); and (2) unrestricted P and F, each plus a given number of rations of carbohydrate (C), which are never less than 7, frequently 8 to 12, and may be as high as 16 or 18. Dieting instructions are therefore reduced to the simplest. In many severe cases the restricted P and F diet plus 7 to 10 rations is ordered; in a few of the severe, most moderate and all mild cases no restrictions as to P and F are made, and the patient is instructed as to how many rations of C he may take, and these he chooses according to his fancy from the table. It will thus be seen that, whether restricting P and F or not, our practice is to allow a diet which has a high C content, but which is not so high as that containing 250 g. mentioned in your annotation. In short, we have found that the best clinical results, together with the most pleasing régime for the patient, is one in which the P and F are either considerable or unrestricted, and the C allowance is generous; in fact, it represents the mean between the two extremes which you mention. In order to avoid ketosis at least 70, and sometimes more, grammes C are necessary.*

In a recent examination of 125 of our records the effect of the unrestricted P and F diet, in those cases in which it had been ordered, on the blood-sugar level was noted, and it was found that it was giving satisfactory results (as judged by this relatively rigid standard) in the mild and moderate cases, and in some of the severe cases also. Further, some time ago we undertook a more elaborate investigation by noting the blood-sugar curve plotted four times during the day before and after patients were changed from restricted to unrestricted P and F; the rations of C and the insulin dose, if any, were kept constant. Judged entirely by the rigid standard of blood-sugar level alone, the majority showed no deterioration on the unrestricted P and F diet, and even the minority, showing a generally raised blood-sugar level, were clinically well and progressing satisfactorily.

The records of a large number of blood-sugars have shown that there are very considerable variations in the amount of glucose metabolised by an extra unit of insulin—varying with the head of sugar in the blood, the size of the original dose of insulin (which is related to the insulin capacity of the individual), and perhaps an individual unknown factor. Thousands of blood-sugar estimations have emphasised the well-known fact that the blood-sugar may vary widely in the same person, unaccompanied by any clinical change, alteration in diet, or insulin dose. This fact has to be borne in mind in assessing the results of changes in diet and treatment.

Our experience is generally in accord with your statement that, since the introduction of insulin, patients look and feel well, no matter what they are eating—providing that some balance between insulin dose and carbohydrate intake is retained and ketosis is guarded against. Frequently they report they feel better on the higher diet, even though the blood-sugar level may be raised by 0·1 per cent. It is a fairly common experience to find that a patient will feel better on a diet giving a blood-sugar of 0·2 to 0·25 per cent. instead of a lower one keeping the blood-sugar down to 0·1 or 0·15 per cent.

Dr. Joslin in his diabetic manual is recommending 100 to 150 g. C daily and remarks that this often calls for a higher insulin dose. We would add that, providing 80 or more grammes C can be metabolised satisfactorily on a given insulin dose (if any), often an increase of P and F may be allowed without any raising of the blood-sugar or call for more insulin. The explanation of this is obscure.

I am, Sir, yours faithfully,
ROBERT GITTINS,
Diabetes Research Student, The General Hospital,
Jan. 31st, 1931. Birmingham.

THE QUALITY OF PANEL SERVICE.

To the Editor of THE LANCET.

SIR,—In your last issue, under the heading Panel and Contract Practice (p. 274), Dr. Hodder is reported as saying that "the medical practitioner in the treatment of his insured patients is not restricted in any way as to the drugs he should employ in his prescriptions." What a delightful sop to the insured patient this is! Personally I am definitely restricted in my prescribing. Since starting practice here about two years ago I have twice had letters to answer referring to over-prescribing, and twice had to attend interviews at my surgery to "explain" my over-prescribing. As I naturally am not going to run any risk of being fined, in the majority of prescriptions now I use the simplest of the National Formulary examples—mist. alba, mist. expect., &c. Thus I am definitely restricted (1) by fear of loss of time, (2) by fear of further worry, (3) by fear of monetary loss in fines, and, however slight these fears should be, they do undoubtedly restrict one's prescribing.

I am, Sir, yours faithfully,
C. C. FENWICK, M.B., B.S.
Rochdale, Jan. 31st, 1931.

MASTOIDITIS IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—I am indebted to Dr. E. Ashwood Underwood for drawing attention (THE LANCET, Jan. 31st, p. 240) to the fact that I have omitted in my work on "Acute Infectious Diseases" to mention the occurrence of mastoiditis as a complication of diphtheria, an omission which I propose to repair in a subsequent edition. I have, however, on p. 16 of my second edition, emphasised the frequency of mastoiditis as a complication of primary diphtheria of the middle ear, and referred to a paper by Lambert,[1] who in a series of 11 cases of primary diphtheritic otitis had four complicated by mastoiditis. Although much less common than in scarlet fever, otitis media in my experience is not so rare a complication of faucial diphtheria as Dr. Underwood maintains. In the course of last year, out of 1428 completed cases at the Western Hospital, 23, or 1·6 per cent., developed otitis, but only one of these, a girl aged 9, showed any signs of mastoid involvement. Wilde's incision was employed, and recovery took place without further intervention. A still greater frequency of otitis as a complication of diphtheria will be found in the Metropolitan Asylums Board's reports, especially in that of 1910, which shows that the incidence of this complication during the preceding ten years ranged in the various hospitals of the Board from 4·01 to 7·4 per cent., the average being 5·6 per cent. No statistics, however, are shown in these reports of the incidence of mastoiditis in diphtheria, probably owing to its extreme rarity.

I am, Sir, yours faithfully,
J. D. ROLLESTON.
Western Hospital, S.W., Jan. 31st, 1931.

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[1] Arch. méd. belges, 1920, lxxii., 382.

HOMINAL EXPERIMENT.

To the Editor of THE LANCET.

SIR,—I should like to inquire where I may find a printed, typed, or mimeographed outline of a course in medical school physiology which meets or is the closest approach to that which Lord Moynihan holds as an ideal (THE LANCET, 1930, ii., 779, et seq.).

I feel that it would be an advance to have students do considerable experimentation upon themselves as well as using clinical material for laboratory work in physiology. It would be merely a time-consuming task for me to sketch up such an outline but it would be very obvious, to begin with, that it would lack the sense of proportion and maturity which would come only with use and continual revision.

We teach physiology in the University of Georgia from a list of printed directions, with simple apparatus and upon animals as well as upon the student himself. I would welcome more experiments upon the students themselves and upon clinical material. In making this move I feel that we must adhere to simple experiments, as free as possible from those elements which divert the attention of the student, and to experiments which yield uniform results.

I am, Sir, yours faithfully,
E. W. SCHWARTZE,
Professor of Physiology, University of Georgia.
Jan. 15th, 1931.

SEX DETERMINATION.

To the Editor of THE LANCET.

SIR,—I have lately come across three cases of childbirth in which the date of conception was known. In one case it was 11 days after the beginning of a period, in another 12, and in the third 13. All three children were boys and all three mothers had previously had girls only. Mrs. Erskine, in her book "Sex at Choice," says that children conceived before the tenth day after the beginning of a period may be of either sex, while those conceived between the tenth and the sixteenth day will be boys and those during the last week before a period, girls. I know that on cattle farms the sex of the calf can, in most cases, be regulated by the time during the œstral cycle at which the bull is put to the cow. Huxley has recently shown that the sex of a child depends on the number of chromosomes in the fertilising spermatozoön, so, if what applies to cattle applies also to human beings, it seems possible that the affinity of the ovum for the "male" or "female" spermatozoön varies at different times of the menstrual cycle. As this is a subject which has interested mankind almost since mankind began, and as one can argue nothing from three cases I hope that others may give their views and experiences.

I am, Sir, yours faithfully,
H. WILLIAMSON, M.D., F.R.C.S. Edin.,
Major, I.M.S.
Baluchistan, India, Jan. 4th, 1931.

PUERPERAL SEPSIS.

To the Editor of THE LANCET.

SIR,—Perhaps the problem of puerperal sepsis will be met (as far as cases arising in hospital are concerned and not infected before admission) by having maternity hospitals built outside the great cities. These lying-in hospitals of the future will probably have semi-open-air wards and theatres, of sanatorium type. Under such conditions the standard of health of the patients, nursing, and medical staff can be maintained at a high level, and it may well be that the presence or absence of streptococci in the nasal flora would become a matter of small importance. After all, an almost imperceptible change in food and habits has caused the disappearance of chlorosis in modern life, and under suitable conditions the same fate should attend puerperal sepsis.

I am, Sir, yours faithfully,

J. C. G. DICKINSON.

Braunton, N. Devon, Jan. 31st, 1931.

ACUTE TOXIC HEPATITIS AFTER ACRIFLAVINE.

To the Editor of THE LANCET.

SIR,—I have regularly used acriflavine since first learning of its antiseptic properties from Dr. Browning of the Middlesex Hospital many years ago, and I am pleased to be able to endorse Dr. Hanschell's letter in your last issue. I have employed it orally by means of enteric coated tablets, intravenously in septicæmia by means of a solution of neutral tablets for this specific purpose, and locally, in the treatment of wounds, by solution and emulsion. It is still, I understand, used at Middlesex Hospital, and the extensive experience quoted by Dr. Hanschell confirms my opinion that it can safely be used with ordinary care without fear of untoward effects. It seems extraordinary that so many years have elapsed before deleterious symptoms have been reported. It would be interesting to know from which firm the drug was supplied in the cases quoted by Dr. Cullinan. Personally I only use preparations from one firm who specialise in its manufacture. I have come to regard acriflavine as one of the safest and as near the ideal antiseptic as at present obtainable.

I am, Sir, yours faithfully,

T. YOUNG SIMPSON.

Harley-street, W., Feb. 3rd, 1931.

MEDICAL NEWS

niversity of Cambridge.

E. G. Fearnsides Scholarship.—This scholarship; which is for clinical research on the organic diseases of the nervous system, is open to members of the university or of Girton College or Newnham College who are graduates or titular graduates in Medicine, or to graduates or titular graduates in Arts who have passed Part II. of the Natural Sciences Tripos. Applications must be sent to the Registrary before June 20th.

University of London.

Among new Fellows of King's College are Sir George Newman, chief medical officer of the Board of Education and the Ministry of Health, and Mr. Arthur Edmunds, senior surgeon to King's College Hospital.

The Julius Mickle Fellowship for 1931 has been awarded to Dr. C. H. Andrewes for research on viruses.

Royal College of Physicians of London.

At a meeting of the College on Jan. 29th, with Sir John Rose Bradford, the President, in the chair, the following candidates were admitted to the Membership:—

Gilbert Cleary Babington, M.D. Lond., Kenneth Vernon Bailey, M.D. Manch., William George Barnard, L.R.C.P., Andrew Russell Buchanan, M.D. Melb., George Douglas Gordon Campbell, M.B. Toronto, Frederick Russell Chisholm, M.D. Melb., George Alexander Davidson, M.D. Manitoba, Derek Ernest Denny-Brown, M.B. New Zeal., Carl Hercules Fouché, M.B. Edin., John Lewis Franklin, M.B. Camb., Mohammad Mohammad Jaafar, M.B. Cairo, Alexander Stephenson Hall, L.R.C.P., Percy Ellis Thompson Hancock, L.R.C.P., Sydney Walpole Hardwick, L.R.C.P., John Clifford Hoyle, M.B. Lond., Stanley George James, M.B. Sydney, Florence Heath Johnson, M.B. Oxf., Austin Braybrooke Kettle, M.B. Lond., Norman Murdoch Matheson, M.B. New Zeal., Louis Mirvish, M.B. Cape Town, William Eric Marcus Mitchell, M.B. Lond., Geoffrey Charles Pether, M.B. Lond., Datla Satyanarayana Raju, M.B. Madras, George Harold Robertson, M.D. New Zeal., Stephen John Scurlock, M.D. Lond., Gwladys Victoria Smallpeice, M.D. Lond., Laurence Alfred Howard Snowball, M.B. Lond., Edward Samuel Stern, L.R.C.P., Samuel Sappy Guzman, L.R.C.P., Percy Stanley Tomlinson, L.R.C.P., and Ernest Rohan Williams, M.B. Lond.

Licences to practise were conferred upon 127 candidates (110 men and 17 women) who have passed the Final Examination of the Conjoint Board. The following are the names and medical schools of the successful candidates:—

J. E. Abell, Leeds; I. S. Acres, London; F. P. Adams, St. Bart.'s; S. S. Ahluwalia, M.B., Punjab and Univ. Coll.; W. Alexander, Cambridge and St. Thomas's; S. Amir-ud-Din, M.B., Punjab; A. T. Andreasen, St. Bart.'s; Gwendolen E. Austin, King's Coll.; H. B. Barker, St. Mary's; C. O. Beresford, London; C. E. Bevan, Cambridge and St. George's; B. N. Bhandari, Punjab and Durham; K. Biden-Steele and E. T. Blacklee, Guy's; J. F. E. Bloss, St. Thomas's; L. T. Bond, Cambridge and St. Thomas's; J. D. Bright-Richards, Liverpool; C. Buck, St. Mary's; J. T. Cahill, Galway and London; Canwarden, St. Mary's; A. B. Carter, Cambridge and St. Thomas's; W. N. Chalmers, Liverpool; M. H. Churchill, St. Bart.'s; A. R. Clarke, Guy's; G. M. Couder, Middlesex; S. Cotman, St. Mary's; J. L. S. Coulter, Bristol; S. T. Cowan, Manchester; H. E. B. Curjel, St. Thomas's; A. Cursham, Cambridge and St. Thomas's; R. D. Darley, Univ. Coll.; ane A. Davies, Cardiff and Royal Free; R. R. Davies, Univ. Coll.; F. M. Day, St. Mary's; C. G. Eastwood, M.B., Manchester; J. M. Erskine-Young, M.B., Liverpool; C. F. Evans, Melbourne and London; Mary Evans, King's Coll.; B. E. Fernando, L.M.S., Ceylon and Middlesex; E. D. FitzPatrick, Birmingham; J. S. B. Forde, Manchester; R. J. Furlong, St. Thomas's; J. R. Gilmour, London; R. W. Graham-Campbell, Cambridge and St. Bart.'s; E. B. Grogono, London; Rachel Gubbay, M.B., Punjab and Royal Free; N. Harburn, Manchester; H. E. Harding, London; Florence R. Hart, King's Coll.; Joan E. Harwood, Charing Cross; F. T. J. Hobday, Cambridge and St. Bart.'s; G. N. Humphreys, Cambridge and St. Mary's; J. T. Irving, Cambridge and Guy's; D. W. James, Guy's; N. R. Jeffery, Manchester; V. S. John, M.B., Rangoon and Guy's; E. Johnson, Manchester and Univ Coll.; E. Jones, St. Thomas's; L. R. Jordan, Bristol; Henrica A. Kellgren, Univ. Coll; J. A. Kersley, Bristol; T. C. Lansdale and S. Lefcovitch, Guy's; C. S. Lewis, Cambridge and London; A. H. Loudoun, St. Thomas's; Marjorie Low, Royal Free; G. G. Ludgater, Cambridge and London; Marjorie N. Lunn, Royal Free; J. O. McCarter, Manchester; S. F. Marshall, St. Bart.'s; R. W. Maxwell, Univ. Coll.; W. A. Mirza, M.B., Lucknow and London; E. D. Morgan, Manchester; J. E. L Morris, Liverpool; Lois M. Munro, Royal Free; Emilata Nawalkishore, M.B., Bombay and Royal Free; Ethelwyn M. Newham, Royal Free; D. Ockman, Manchester; M. J. O'Donnell and J. W. Oliver, Guy's; Doris Onions, Leeds; J. A. R. O'Regan, M.B., Otago; F. L. L. Patrick, St. Bart.'s; H. C. Pickering, London; J. H. Pierre, St. Bart.'s; Winifred M. Pitkin, Oxford and Charing Cross; W. H. Poole, Cambridge and London; S. Rajapaksa, King's Coll.; T. P. V. Rao, Burma and St. Thomas's; G. J. Roberts, M.B., Cardiff and Edinburgh; H. W. Rodgers, St. Bart.'s; L. Rose, St. George's; P. M. G. Russell, Univ. Coll.; J. D. Scott, St. Bart.'s; T. D. Shahani, M.B., Bombay and Charing Cross; E. M. Sharples, St. Bart.'s; I. Sherman, Cape and St. Bart.'s; C. H. Sherwood, Birmingham; R. H. D. Short, Univ. Coll.; M. I. Silverton, Leeds; R. N. C. Smith, Guy's; L. R. C. South, Cardiff and London; S. K. Squires, St. Mary's; A. M. Stewart-Wallace, Univ. Coll.; N. V. Storr, St. Thomas's; Mary Sutcliffe, Cambridge and Leeds; R. B. Sutcliffe, Guy's; T. R. Swarup, M.B., Lucknow and King's Coll; W. A. F. Taylor, Bristol; W. S. Terry, Birmingham; O. Thomas, London; W. E. Thomas, Cardiff; W. J. Tindall, Univ. Coll.; T. F. Todd, Guy's; V. H. Tompkins, Cambridge and Leeds; R. L. H. Townsend, Oxford and London; D. Trimble, Birmingham; R. S. Trueman, St. Bart.'s; N. A. Vernon, St. Thomas's; F. L. Wheaton, Middlesex; A. G. W. Whitfield, Birmingham; R. C. W. Whitling, Oxford and London; R. Wilkinson, Birmingham; Anne E. Williams-James, Cardiff and Bristol; D. Wilson, St. Mary's; Edna M. Wilson, Charing Cross; and T. D. G. Wilson, Cambridge and Univ. Coll.

A supplementary list of licentiates will be issued after the termination of the examination on Feb. 4th.

The undermentioned diplomas were conferred (jointly with the Royal College of Surgeons) upon the following candidates:—

Diploma in Public Health.—S. D. Ahuja, Mary E. Appleby, R. Behari, F. W. Bradley, E. L. Carter, Elizabeth Cooper, W. L. S. Cox, J. Fenton, A. Golombek, F. Grundy, M. L. Gulatee, W. Gunn, Josephine M. Howells, L. R. Kapur, Margaret S. Mackay, L. M. J. A. Pilot, S. T. Seccombe, W. E. Tyndall, and K. K. Wood.

Diploma in Psychological Medicine.—W. R. Ashby, E. P. Boyle, T. P. Curran, B. Das, J. B. Dedman, G. H. Fraser, B. K. Lal, W. Lambert, S. J. Laverty, T. W. Robbins, T. G. Short, and May I. Wallace.

Diploma in Laryngology and Otology.—A. L. Bryant, E. J. G. Glass, A. S. Hatch, H. B. Lieberman, M. L. Poston, D. I. Rees,

W. J. Roche, G. C. Snell, Nettie H. Stein, J. D. Wicht, and R. N. Wilcox.

The College passed a resolution expressing strong disapproval of the proposal contained in the Representation of the People Bill to abolish university franchise and university representation.

Dr. J. A. Arkwright was elected an Examiner in Tropical Medicine and Hygiene, and the President announced that the Censors' Board had appointed Dr. James S. Collier to deliver the FitzPatrick Lectures in November.

The following Fellows were appointed representatives of the College: Sir John Rose Bradford, at the centenary celebrations of the British Association for the Advancement of Science in September next; Dr. Henry Hallett Dale, at the Faraday celebrations at the Royal Institution of Great Britain in September; Dr. F. G. Chandler, at the seventh annual conference of the National Association for the Prevention of Tuberculosis at Margate in June; Dr. S. Monckton Copeman, at the congress of the Royal Sanitary Institute at Glasgow in July; and Dr. J. L. Birley, at the second biennial conference of the National Council for Mental Hygiene, London, in May.

Surgeon-Capt. S. F. Dudley will deliver the Milroy lectures (Feb. 26th and March 3rd and 5th) on Some Lessons of the Distribution of Infectious Disease in the Royal Navy; Dr. Macdonald Critchley the Goulstonian lectures (March 10th, 12th, and 17th), on The Neurology of Old Age; and Sir William Willcox, the Lumleian lectures (March 19th, 24th, and 26th), on Toxic Jaundice. All these lectures will be given at the College at 5 P.M.

Scottish Conjoint Examining Board.

The examinations of the Board of the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, have just concluded at Edinburgh. Of 81 entered, the following 18 candidates passed the final examination and were granted the licentiates' diploma.

J. L. Razdan, Barnet Meyerowitz, Fouad Nafi, M. J. Liebenberg, John Cochran, H. W. C. Robertson, E. E. Smithers, A. R. Rasaiah, A. E. Carrol, T. W. Gregory, Wai-Ming Tso, J. C. Blok, C. L. Tessensohn, Nathan Shapiro, Richard Morton, J. D. Blaine, A. A. MacDougall, and Harry Michaelson.

London Jewish Hospital Medical Society.

On Thursday, Feb. 12th, at 3.30 P.M., Dr. Somerville Hastings, M.P., will address this Society on the Trend of Medical Practice. Visitors are invited.

Medical Officers of Schools Association.

The annual general meeting of this association will be held at 11, Chandos-street, London, W., on Friday, Feb. 20th, at 5 P.M. (tea 4.30). Dr. W. J. O'Donovan will read a paper on Impetigo in Day and Public Schools.

Royal Microscopical Society.

At the annual general meeting of this Society in London on Jan. 21st Prof. R. Ruggles-Gates was re-elected president and Dr. W. E. Cooke a vice-president. Among the members of council are Dr. E. W. Bowell, Dr. G. M. Findlay, Prof. R. T. Hewlett, and Dr. J. E. McCartney.

Congress of Thalassotherapy.

The sixth International Congress of Thalassotherapy will be held from May 25th to May 30th at Berck-sur-Mer. There will be opportunities for visiting certain of the battlefields and of inspecting weaving and lace manufactories as well as Paris-Plage and Le Touquet. Full information can be obtained from Dr. Mozer, General Secretary, Hôpital Maritime de Berck-Plage, Pas-de-Calais, or from Dr. Pierret, 95, Avenue Kléber, Paris 16.

Summer Cruise to Norway.

Our contemporary the *Bruxelles-Médical* has chartered a steamer, the *Foucauld* (15,000 tons) and organised a cruise during July to the coast of Norway with various extensions of an interesting route. The departure will take place from Dunkirk on July 11th, calling at Zeebrugge on July 12th; afterwards the route going north along the coast of Norway will allow of visits to various beautiful fjords until Spitzbergen is reached. The return journey south, along the pack-ice, will include stops at Jan Mayen, the Faroe Islands, the Hebrides, and Leith. Here the British tourists can disembark, but the actual voyage is timed to end on August 6th by return to Dunkirk. The reduced return fare for doctors and their wives and children accompanying them is £36 10s. per head first-class, but only £16 second-class. The inclusive expense of the excursions is calculated at £7 5s. For dates, full particulars, and prices of accommodation application should be made to the Section des Voyages de Bruxelles-Médical, 29, Boulevard Adolphe Max, Brussels. The rebates to members of the medical profession are considerable.

AT their quarterly meeting on Jan. 28th the directors of the Naval Medical Compassionate Fund distributed £99 among applicants.

Dr. Kenrick Stanton Wise (Surgeon-General) has been appointed a member of the Executive Council of the Colony of Trinidad and Tobago.

ON the occasion of the tenth anniversary of the Polish Society of Oto-Laryngology Sir StClair Thomson was elected an Honorary Member.

Hospital Sunday.

The London Hospital Sunday this year has been fixed for June 21st.

Coventry Hospital Saturday Fund.

Last year this fund collected £23,500, which includes £3000, the proceeds of the annual carnival. The money was last week handed to the Coventry and Warwickshire Hospital. Since the fund was begun in 1873 it has raised over £328,0

Keswick Cottage Hospital.

Last year 320 in-patients were treated at the M Hewetson Cottage Hospital, Keswick, an increase of the largest number hitherto. The average duration of t stay was 22·75 days, and the average cost per bed £2 13s. an increase of 8*s.* 9*d.* per bed per week over the pre year. A new operating theatre is being built and equi at the cost of Sir John and Lady Randles.

Booking Seats for Out-patients.

On Jan. 27th the Victoria Memorial Jewish Hospi Manchester, inaugurated a scheme designed to obviate t long waits of out-patients and based upon the the booking-office system. An office with a telephone a plan of the hall with numbered seats has been in and each out-patient will be allotted a time at which may attend and receive treatment without delay. As patient leaves after treatment, or afterwards by teleph he will book an appointment and receive a ticket colo according to the doctor who is attending him. Doctors also be able to book seats for out-patients by teleph The out-patient attendances at this hospital last exceeded 58,000, but since Jan. 1st there has been a large increase, chiefly of non-Jews. The hospital is t enlarged at a cost of £40,000.

Dinner to Sir Marriott Cooke.

On Jan. 26th Sir Marriott Cooke, M.B., whose offi Commissioner of the Board of Control ended on the co into operation of the new Mental Treatment Act, entertained at dinner at the Café Royal, London, by late colleagues. Joining the Lunacy Commission in 189 Sir Marriott became in 1913 a Commissioner of the Board of Control, and was its chairman during the years 1916-1 He continued as an unpaid Commissioner after his retirement in 1921. The object of the dinner was to mark the affectionate esteem in which his late colleagues hold him, and their sense of his devotion to the cause of those suffering from mental disorders during his many years of public service—a period which, including the years spent as medical superintendent of the mental hospitals at Devizes and Powick, has extended to 56 years.

Second Garton Cancer Prize.

The Garton prize and medal has been instituted by the British Empire Cancer Campaign to promote investigations into the nature, causes, prevention, and treatment of cancer. A medal and an honorarium of £500 will be awarded to the person, or group of persons, who submits the essay embodying the results of original investigations which, in the opinion of the judges appointed by the Campaign. is the best contribution towards knowledge of the biological effects and mode of action of radiations upon malignant and other cells. The prize may be divided or reserved. Candidates must be British subjects domiciled in the British Empire, and dissertations must be received by Dec. 31st, 1933. Further particulars may be found in our advertisement columns. The subject of dissertations for the first Garton medal and prize (already announced in our columns) is the Early Diagnosis of Cancer. Entries for this prize must be received by Dec. 31st, 1931.

INDEX TO "THE LANCET." VOL. II., 1930.

THE Index and Title-page to Vol. II., 1930, which was completed with the issue of Dec. 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

OBITUARY

SIR ANDREW BALFOUR, K.C.M.G., C.B., M.D.,

DIRECTOR, THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

SIR ANDREW BALFOUR.

[*Photograph by Louis Schmidt.*

WITH great regret that will be shared by all the medical profession and many outside it we record the death on Friday, Jan. 30th, of Andrew Balfour. So diverse were his activities, and so noteworthy his achievements that it is difficult yet to assess the part he played in the development of tropical medicine and hygiene in this country in recent years. At the time of his death, as Director of the London School of Hygiene and Tropical Medicine, he had charge of an educational scheme of the first magnitude. Born in Edinburgh 58 years ago—on March 21st, 1873—he was the son of Dr. T. A. G. Balfour, a well-known practitioner in that city and versed in the pharmaceutical action of drugs; from him Andrew derived that accurate knowledge of pharmacology and interest in the discovery of new compounds which were such a feature of his cientific activities. He passed the earlier years of his education in Watson's College and at he University of Edinburgh, and after matriculation he joined his father in practice in 1894. Soon, however, it became apparent that his inclinaions were directed to the preventive rather than he curative side of medical practice. He became devoted to the developments of hygiene, seeing in he prevention of disease a task of an infinitely wider mportance than its cure when established. Indeed, he looked forward, perhaps as a visionary, to that time when infectious disease shall be no more. He proceeded to Cambridge, to Caius College, in 1895, ook the D.P.H. in 1897, and did a considerable amount of research work on typhoid in the newly reated medical laboratories of the University. In 1898 he graduated M.D. of Edinburgh and gained he Gold Medal of the University with a thesis on the oxicity of dyestuffs and river pollution. He afterwards obtained the B.Sc. in public health subjects.

During the following years a love of travel and adventure, always dormant within him, was stimulated by the outbreak of the South African War. He served as a civil surgeon in 1900–01, and contracted typhoid himself in the fever camps of Pretoria. He emerged from this campaign with the South African Medal and three clasps, which constituted he beginnings of what he afterwards playfully referred to as his "herbaceous border." In 1901 he came under the influence of Patrick Manson, and that great man directed him, as he did at this period so many others, into the paths of tropical medicine, and became hereafter his guide and friend. In the following year Balfour went to the Sudan as Director of the Wellcome Tropical Research Laboratories, founded and presented to the city by Mr. H. S. Wellcome. He was appointed the first medical officer of health of Khartoum and there was every need for such a man to cleanse the Augean stables of the Khalifa and to transform them into what is to-day the modern, well-planned, well-sanitated city of Khartoum. He banished malaria from the town, making the mosquito a rare incident and the harbouring thereof a punishable offence. (It is related that he himself was the first offender in the new ordinance he introduced and was forced to fine himself ten shillings for the discovery of one such insect in "Balfour House.") His knowledge of Arabic, his personal ascendancy over the Sudanese, and his great personal energy and example triumphed over all difficulties. From dawn to dusk in the sweltering heat and "*habuba*" of Khartoum he was to be seen, urging, directing and training his sanitary corps in which were recruited all the scallywags of Khartoum. He transformed them into a smart body of men and gave point to his maxim that the care and health of native communities should be a feature of modern administration. His work in Khartoum brought him into personal contact with the great triumvirate of the British administration of the Sudan—Lord Cromer, Lord Kitchener, and Sir Reginald Wingate—all of whom became thereafter his close friends and supporters.

But the duties of organisation, vast and various as they were, did not absorb his energies. He undertook many scientific researches which have stood the test of time and which were embodied in the four quite exceptionally valuable reports of the Wellcome Research Laboratories which appeared from 1904–11. He must be given credit for several important protozoological discoveries, for classical work on spirochætosis of birds and of man, for the working out of the life-history of these organisms in the tick, and for the discovery of a leishmanoid disease of the skin—all of which researches are being confirmed to some extent and for the discovery of which he is now receiving full credit. In 1908 and again in 1911 he published, in collaboration with Major R. G. Archibald and other lieutenants, his reviews of recent advances in tropical medicine, which brought the influence of correlation to the literature of tropical medicine, and gave a distinct impetus to the movement which ended with the organisation of the Tropical Diseases Bureau in 1912. At this time, too, he conceived the idea of a floating laboratory for which a special vessel was constructed and presented to the Sudan Government by Mr. Wellcome. In this vessel, together with scientific colleagues, notably Dr. C. M. Wenyon, he explored the upper reaches of the White Nile and thereby contributed considerably to protozoological research. In 1913, after 11 years of fruitful service, he returned from the Sudan to become the founder of the Wellcome Bureau of Scientific Research, now in Endsleigh-gardens, W.C.1. In the latter part of this year he found time to undertake an extensive tour in the West Indies and South America, during which he stated his conviction from personal observation that the indigenous monkeys—

notably the red-howler monkey—were the reservoir hosts of yellow fever, a prophecy that has since, in part, proved to be correct.

With the outbreak of the Great War he resumed his military associations, and with the rank of lieut.-colonel was appointed a member of the Medical Advisory Committee to the Mediterranean Expeditionary Force. At first in Mudros, Salonika, and Egypt, and afterwards in Mesopotamia he did splendid service, becoming President of the Medical Advisory Committee, and suggesting and organising sanitary reforms throughout these areas of war. Later he was appointed scientific adviser in East Africa, and saw much of the campaign in what was German East Africa, travelling back via Uganda and the Nile to Egypt, whither he had been summoned to reorganise the health service of that country and to become President of the Public Health Commission. Later, in 1918, he was invited by General Allenby to Palestine to examine and advise generally on the antimalaria measures which constituted a feature in the decisive termination of that campaign.

He returned to England in July, 1918, an apparently worn out man, but early in 1919, with refreshed energies, he organised with almost demoniacal enthusiasm the Museum of the Wellcome Bureau of Scientific Research, and embarked on fresh scientific inquiries, notably on the infection of London rats with *Leptospira icterohæmorrhagiæ*. In 1921 and again in 1923 he undertook expeditions, at the instance of the Colonial Office, to Mauritius and to Bermuda to report upon the sanitary conditions prevailing in these islands and to make suggestions for their improvement—measures which have resulted in very considerable amelioration of health to the inhabitants. And then, in the latter part of 1923, he was appointed director of the London School of Hygiene and Tropical Medicine, an appointment which was made possible by the generosity of the Rockefeller Foundation, which had contributed a large sum for the building and equipment of this school. For the last seven years Balfour's boundless energy was devoted to the perfecting of this school, where his own twin subjects were to be taught and where research was to be undertaken on a scale hitherto unattempted in this country. He supervised every detail in the conception of the school and the structure of the building as it began to rear its head in Gower-street.

In 1926 he visited the Sudan as a guest of the Sudan Government at the opening of the Makwar Dam, and was hospitably entertained by many old friends; a few months later he was at Warsaw for the opening of the State Institute of Hygiene, and afterwards he crossed to the United States to deliver the opening address at the Johns Hopkins School of Hygiene. In 1925–27 he was President of the Royal Society of Tropical Medicine, and throughout his period was a member of many Government advisory committees. His over-strenuous life was now beginning to tell on him, and when in 1930 he was appointed FitzPatrick lecturer at the Royal College of Physicians of London he was away on sick leave. From this breakdown he never wholly recovered.

Amongst Andrew Balfour's contributions to medical literature may be mentioned his "Public Health and Preventive Medicine," 1902; "Memoranda of Medical Diseases in Tropical and Subtropical Areas," and (with H. H. Scott) a fine volume for the British Empire Exhibition on "Health Problems of the Empire" in 1924. But these form only a small part of a voluminous output in the form of lectures, reports, and formal addresses. He had a fine style and great facility, for in his student days he wrote five story books, of which the "Golden Kingdom," founded upon the tragedy of trypanosomiasis in Central Africa, achieved a considerable circulation, and all were characterised by a love of adventure and sport. For Balfour was a fine athlete, represented both his universities, Edinburgh and Cambridge, on the football field, while he played as a Scotch International forward in the Rugby matches of 1896 and 1897. His interest in Rugby football was maintained throughout, and during the present season he was elected president of the Scottish Rugby Union, an honour of which he was very proud.

Andrew Balfour was a man of quite exceptional charm; kind and straightforward, all were attracted to him by his modesty and sincerity. Single-minded and unflinching there never lived a more devoted disciple of science. He was created C.M.G. in 1912, C.B. in 1918, and K.C.M.G. in 1930. He was D.Sc. and LL.D. of the University of Edinburgh, LL.D. of Johns Hopkins and Rochester Universities, U.S.A., Fellow of the Royal Colleges of Physicians of London and Edinburgh; Cragg's Research Prizeman of the London School of Tropical Medicine in 1905, and won the Mary Kingsley medal of the Liverpool School in 1920.

Sir Andrew Balfour married in 1902 Grace, daughter of Mr. George Nutter, of Sidcup, and leaves a widow and two sons, the elder of whom is a member of the medical profession. They are assured of deep and wide sympathy.

Sir George Buchanan writes:—"No memoir of Andrew Balfour can omit the work of 1915–17. He was then among three or four of us who, with the label of the Medical Advisory Committee, went from area to area of the Eastern sphere of operations. We were despatched—late in the day—to Mudros, and thence to each of the Gallipoli beaches, Hellas, Anzac, and Suvla, returning to the mélange of armies and commands which found themselves in Egypt during 1915–16; sent across to Salonika on the first landing of the British troops, and again returned there when they were established in its "birdcage"; subsequently, after the fall of Kut, sent to participate and help, as far as sanitarians and epidemiologists could, in the splendid preparations which enabled Maude to cut through in Mesopotamia to Bagdad and settle events, in the way they were settled, in that critical area of the world war. Our task was to understand and advise upon existing epidemic disease and on risks of epidemics, and to deal with any other factors affecting the general health of the armies. At the time, and equally in retrospect, it is hard to say where we were inevitably futile, where we succeeded a little, or where, as I believe happened in a few cases, we were lucky enough to turn the balance to the right side. But whatever judgment might have been passed on our efforts as a committee, and our visitations from front to front there was never any question about our carrying with us one great asset—namely, the personality of Andrew Balfour. It may have been an overworked medical officer in the front trenches, or a sanitary officer reduced to despair in handling unfamiliar and seemingly impossible conditions, or perhaps a hospital or base medical unit, feeling itself unappreciated or at sea in the midst of diseases of which its members had no experience—whoever they were, they were the better for him. On the one side he had things to tell them, from experience of the South African war or as an authority on tropical medicine, always receptive of the latest news or sanitary designs. On the other, he could leave with them, and how often have I seen him do it, the contagious enthusiasm of a man out to give his best, enjoying life as he passed through it, full of the anecdote and the traditions of Edinburgh, the school and university which he loved; recognised from the very first contact as one inspired by the worthiest traditions of his profession and in whom no meanness could be found. His enthusiasm of the moment, the latest fly trap or vaccine, might or might not prove all that was expected of it. It was of little consequence; the leaven of courage and good endeavour was left and it continued to work long after his visit. Balfour had many and different interests and ambitions, but at heart he was always a romantic, and, looking back on those two or three fateful years, one is happy to think how well he then succeeded, and must have known that he succeeded, in giving proof of the ideals of devotion to his profession and to his country which were so deep in his nature."

Another close associate with Andrew Balfour in his later work writes: "It must be rare indeed that the passing of one man arouses so much personal sorrow in men's hearts. Andrew Balfour is dead! And there is not one of that host proud to be numbered amongst his personal friends who does not feel intense grief at the knowledge that this great, lovable personality has gone across the border. His achievements, starting out from the Edinburgh he loved so well, through Khartoum, Mesopotamia, Egypt, with their tale of honours tell of his services to tropical medicine, and his untimely end comes soon after the completion of that wonderful new home of hygiene and tropical medicine in Bloomsbury to which the last few years of his life were devoted with so burning a zeal. Such records are immediate and particular tributes to his work, but who shall assess the value of the influence on his fellows of his sterling honesty of purpose, of the intense personal affection which he inspired in everyone who came into contact with him? When one of his junior colleagues lay through a long illness at the Hospital for Tropical Diseases, not a day passed—not one day, week-day or Sunday—on which Balfour failed to visit him, if only for a minute or two to give him a cheery greeting and pass the time of day. Let the example stand as typical of the thoroughness and the devotion which this big, gentle soul showed in his work always and with his staff everywhere. Character is very nearly all that matters in the long run, and the world is definitely the poorer for that Andrew Balfour is no more."

JOHN EDWARD GEMMELL, M.B., F.R.S. Edin.

THE medical profession in Liverpool has sustained a severe loss by the death of Dr. John Gemmell on Jan. 24th, at the age of 67, after a long illness borne with exemplary patience. For many years he had been regarded as one of the leading obstetricians of the North of England.

A native of Liverpool, John Edward Gemmell was educated at the Liverpool Institute and at the University of Edinburgh, where he took the class prize in obstetrics and gynæcology and graduated in 1885. On returning to Liverpool, he was appointed house surgeon at the Royal Infirmary and soon made up his mind to devote his attention to obstetrics and the diseases of women. Having this end in view, he became Holt tutorial scholar in physiology and demonstrator in pathology at University College, Liverpool, and by holding these appointments he acquired a scientific outlook which was conspicuous in his later clinical work. His ability, his attractive personality, and his capacity for work were quickly recognised, and in 1890 he was elected honorary assistant surgeon to the Hospital for Women, Shaw-street, where he remained on the active staff for no less than 33 years. He also served on the honorary staff of the Liverpool Maternity Hospital, where he was one of the pioneers of antenatal work. The introduction of antenatal methods for out-patients aroused some opposition, and Gemmell was amused to recall the fact that when he first employed a pelvimeter, he was accused of carrying out operations in the out-patient department. A third post was that of honorary gynæcologist to the Victoria Central Hospital, Wallasey—an appointment which he retained until the beginning of his fatal illness.

Gemmell's reputation for exceptional powers of diagnosis, sound judgment and operative skill soon spread beyond the confines of hospital work, and he acquired a consultant practice which extended over the whole of the north-west of England and Wales. For a long time before his retirement from hospital work he was one of the busiest consultants in the north, but the demands of his practice were never allowed to interfere with his hospital engagements, nor did his social activities prevent him taking part in the development of his own specialty. He was not a prolific writer, but his contributions to the literature showed high merit. For many years he was an honoured member of the North of England Gynæcological and Obstetrical Society and rarely missed a meeting; he not only brought forward much pathological material and read various papers, but his verbal contributions were always acceptable and often illuminating. He served in all the offices open to members of this society, was president in 1903 and again in 1925, and attained an affectionate popularity that has rarely been equalled. He also gave his support to the Liverpool Medical Institution and was active in furthering the interests of his fellow members, who showed their appreciation of his work by electing him to the presidential chair in 1920–21. His years of office were eminently successful and he was able to initiate a long-needed endowment fund.

Outside his purely professional activities, Dr. Gemmell was an able and strenuous supporter of auxiliary branches of medical work. As a clinical teacher he devoted much time to medical students and he also took a great interest in the training and examination of midwives. He was always solicitous for the welfare of the younger men, and his advice and help were sought by many of his junior colleagues, who all learnt to regard him with sincere respect and affection. He gave his personal support to everything that could advance the best interests of the profession and was especially anxious for the success of the new College of Obstetricians and Gynæcologists of which he was a foundation Fellow. His public work for the hospitals to which he was attached was approved by lay committees and colleagues alike. His kindliness and capacity for inspiring and retaining confidence were invaluable when negotiations were set in progress for the amalgamation of the two Liverpool women's hospitals, and it was largely owing to his tact that these negotiations remained free from friction and were carried to a successful conclusion.

In spite of his professional engagements, Dr. Gemmell still found time for other activities. For many years he was associated with the old Royal Naval Volunteers as surgeon, and he was an indefatigable traveller, making many journeys to the continent of Europe and beyond. Only a year ago he spent three months on a visit to Burma and Ceylon. He was keen on heraldry and formed an interesting and valuable collection of arms and armour. He was fond of books and published two of his presidential addresses on "Music and Medicine" and "Some Treasures of the Library" (of the Liverpool Medical Institution) in a brochure whose paper, printing, and binding revealed the bibliophile. "Those who were privileged to enter the circle of his household," writes a colleague, "were brought in contact with a home life of a truly ideal kind, and were made aware of the inspiration of his work and the chief source of his happiness. He lived a full, happy, and useful life, and although the loss of his two sons during the war was a lasting sorrow to him, there was no bitterness in his grief."

Dr. Gemmell's widow is left with one son, Mr. Arthur Gemmell, who practises at Liverpool in the same specialty as his father.

ARCHIBALD LEITCH, M.D. Glasg.

THE late Prof. Archibald Leitch, whose death we announced last week, was one of the small band of men whose whole working life was concentrated on different aspects of one central problem. He was never wearied or discouraged by the difficulties presented by cancer research and never sought relief in the pursuit of interesting side lines which had no obvious bearing on the ætiology of new growths. Born at Rothesay in 1878, Archibald Leitch was educated at Rothesay Academy, where he was mathematical medallist, and at the University of Glasgow, where he obtained bursaries in arts and in natural philosophy and mathematics. He was awarded the Bellahouston Gold Medal, the Dobbie-Smith Gold Medal for original research in botany, and the Black Medal for physics, and graduated M.B., Ch.B. in 1902. Throughout his career Leitch remained in close touch with his many friends in Glasgow and especially with the staff of the Pathological Department of the University where his visits were most welcome events.

PROF. ARCHIBALD LEITCH.

[*Photograph by Elliott & Fry.*

His first post was that of house surgeon to the Taunton and Somerset Hospital; he was then junior and later senior house surgeon to the Cancer Hospital, Fulham-road. While there, in 1904 he published in THE LANCET, jointly with Dr. S. J. Murdoch Cameron, his first communication to medical literature, in which the pathology of adenomyoma of the uterus and its relation to adeno-carcinoma is discussed. While at the Cancer Hospital Dr. Leitch definitely decided to embark upon cancer research. He received his early training under Prof. W. Lazarus-Barlow, as assistant director of the Cancer Research laboratories of the Middlesex Hospital. He left London to take up the post of director of the Caird Research Laboratory in Dundee, being given an honorary research fellowship in the University of St. Andrews in 1910. At this period Dr. Leitch did memorable work on the conditions of immunity to transplantable tumours, and on the pathology of multiple tumours in the uterus of the rabbit.

The outbreak of war found him back at the Cancer Hospital as pathologist to the routine department. He joined the R.A.M.C. (T.F.) and was put in charge of a mobile bacteriological laboratory in France, retiring with the rank of major when peace was declared. When Dr. A. Paine resigned in 1920 from the post of director of the research department of the Cancer Hospital, Leitch succeeded him and the pathological services of the hospital were united and developed under his control.

This reorganisation having been achieved, Dr. Leitch threw himself with all his energy into the study of experimental carcinogenesis, a line of work which had just been opened up by the work of Yamagiwa and Itchikawa. The few investigators who were then engaged in this work had produced cancer experimentally by continuing to apply tar to the skin of rabbits or mice until a visible change appeared, such as a formation of warts. Leitch showed that even when the application of tar was extended over a much shorter period and was then discontinued, so that the skin remained apparently unchanged, cancer of the skin would develop after an interval of several months in a certain number of animals. This was an important observation both in its theoretical and in its practical aspects. It demonstrated clearly that the conception of a precancerous state, the existence of which had been suspected on clinical grounds, was justified. Its practical aspect was that it removed the difficulty which up till then had stood in the way of accepting certain forms of cancer as being connected with a special occupation. The fact that workmen such as pitch and tar workers, shale oil workers, mule-spinners, who had been engaged in these occupations for only a limited number of years, would sometimes develop cancer many years after they had left their particular occupation, while men who had been engaged in the same occupation all their working lives remained free from cancer, had been argued as an insuperable objection to making the occupation responsible for the development of cancer. Dr. Leitch's observations cleared away these difficulties and placed the existence of occupational cancers in certain industries on a firm basis. His interest in the industrial aspects of cancer in man was deeply stirred and he was always keen to discuss the problem with those in authority at the Home Office. His later work was mainly connected with the further study of occupational cancer, and with the testing of various materials, such as tars, shale oils, lubricating oils for their carcinogenic properties. Under his directorship the Research Institute of the Cancer Hospital took a leading place in the study of cancer.

Leitch's activities were not confined to work in his own hospital or even in this country. He was the general secretary (honorary) of the International Cancer Committee and a member of the Leeuwenhoek Vereeniging (an international association of cancer workers). From the inception of the British Empire Cancer Campaign he took a prominent part in its organisation. He was the honorary scientific secrtary to the Investigation Committee and to the Scientific Advisory Committee of the Campaign, and acted as editor of the substantial volume which formed the official report of the International Conference, held under the auspices of the Campaign in 1928.

Leitch was a polished writer, a forceful speaker, and when in his view the occasion demanded it, an outspoken critic. Among his scientific colleagues he had many friends, both in this country, and on the Continent and in America. They were attracted to him as much by his vigorous cheerful personality and his sound judgment and sense, as by common scientific interests. His widow, Dr. Ethel Leitch, and her four children, will have the sympathy of colleagues in many different lands for his loss will be widely felt.

Prof. Lazarus-Barlow writes:

"I first knew Leitch in 1906 when he became my assistant in the Cancer Research Laboratories at the Middlesex Hospital, and my appreciation of him and of his qualities steadily grew as the years went on. Perhaps his two outstanding characteristics were his independence of view and his sense of humour. He would always maintain any thesis he was supporting with acumen and vigour; he rather gloried in a Scottish combativeness, but argued ever with a twinkle in his eye and a humorous twist of his lips. On this account he was always a most stimulating colleague and though the argument might be left without arrival at any definite conclusion it bore fruit, if only in the mutual affection that it left between the combatants. There was nothing small or mean about Leitch; he had opponents, of course, to some of the views he put forward but no enemies. When I wrote to him deploring the death of H. B. Fry, his assistant at the Cancer Hospital, the letter he wrote back to me was heartbroken; it revealed an unsuspected affection for all those with whom he had worked in former years and for all his staff, and a devotion to cancer research that in conversation he would often hide with a jest. In type of mind Leitch was physiological rather than anatomical; we used to agree that he was a pathological descendant of Cohnheim, for he was assistant to me, I was assistant to Roy, Roy was assistant to Cohnheim, and something of Cohnheim's wonderful spirit had been passed on through each of us. The scientific world is poorer for his loss and cancer research has suffered a blow from which it will take some time to recover. But Leitch himself would have said, 'Get on with it, Cancer Research is the thing, not you or me.'"

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

Insanity and Divorce.

IN the House of Commons on Wednesday, Jan. 28th, Mr. **HOLFORD KNIGHT** asked leave to bring in a Bill to amend the law relating to matrimonial causes. He said the measure was supported on all sides of the House and was identical in terms with one which was introduced last year with the assent of a very large majority of the House. It proposed to amend the law relating to matrimonial causes by adding to the grounds of divorce the ground that the respondent had been incurably insane and had been so certified for a period of not less than five years continuously before the presentation of the petition. In order to avoid any abuse which might arise from this form of relief there was added a proviso that if the condition of insanity had been caused by the conduct of the petitioner the relief should not be granted. This ground was part of the recommendations of the majority of the Commission on Matrimonial Matters in 1912. The Commissioners said: "Indeed, incurable insanity is more effective in destroying the marriage relationship than any of the other causes which we recommend as grounds for divorce." The relief provided by the Bill was optional and no person was compelled to seek it. The condition of incurable insanity had to be proved to the satisfaction of the Court which had to consider all relevant circumstances.

Mr. **LANG**, in opposing the Bill, said that it raised very much more than ecclesiastical opposition. He asked the House whether it really thought that a definition of five years' insanity was a proper basis upon which permanently to dissolve the marriage relationship. He would have thought that their experience during the long debates on the Mental Treatment Act in that House would have taught hon. Members the extraordinary state of flux of medical opinion on the subject of insanity and he imagined that very few competent medical men would care, at the end of five years' continuous insanity, to certify any person as permanently insane. Since this Bill was last before the House he had received many letters—most of which he agreed were against the view he took and among them was a letter giving the case of a woman who had been in an asylum for ten years and nine months; she was then restored to full sanity and was now happily living with her husband. The possibility of divorce and remarriage of the healthy person and then this contretemps was too terrible to contemplate. It was dangerous to loosen the marriage tie to this extent. This was a Bill for which there was no real public demand from the general body of people who lived happily with each other. If it got on the Statute Book it would be the first step towards companionate marriages.

On a division, leave to bring in the Bill was refused by 148 votes to 114.

Representation of the Universities.

In moving the second reading of the Representation of the People (No. 2) Bill on Feb. 2nd, Mr. **CLYNES** (Home Secretary) said that the Bill provided for the abolition of plural voting by proposing the abolition of the business premises qualification and the abolition of the university constituencies. This was the last stage in the equalising of the suffrage between all members of the community. One exception was to be allowed under the Bill. It was proposed to leave the City of London quite undisturbed. The origin of university constituencies went back to 1603 when James I. granted by charter a right of representation in Parliament to the Universities of Oxford and Cambridge. That was the introduction of a very novel principle into the constitution and the representation of the personnel of the House of Commons at that time. He was certain that hon. Members would agree that it was not the intention of James I. to introduce at that time, or by that means, any popular or democratic element into Parliament. Indeed, the universities were already becoming more aristocratic and less inclined to respond to popular movements. In 1832 university representation did not seem to have been exposed to any serious attack by the franchise proposals which were then so long discussed. In 1867 the continuance of university constituencies was attacked by many notable radicals, and most notably by John Bright. In fact, however, a Member for London University was added. Disraeli defended this addition on the ground that it was desirable that the interests of education should be represented. In 1884 an attack on university representation was led by Bryce because it introduced political considerations into educational questions. Finally, the Act of 1918 preserved the representation of

Oxford, Cambridge, and London, grouped the other English universities into one constituency, and gave to the University of Wales and the Scottish universities some representation. For a university electorate of less than 120,000 12 Members were returned to that House, and with all respect he had failed to observe those high and approved qualifications of independence, depth of knowledge, and wide educational range. In so far as they were in possession of those qualifications he would like to have seen them more abundantly expressed in Parliament. It would not do in these days when they had an average constituency of, say, 60,000 electors for one Member, to give a round dozen of Members to the universities, and in the main Tory Members.

Sir S. HOARE moved the rejection of the Bill. He said that there was a time when university representation was open to the criticism that the universities were a class borough and that the voters were almost always Conservatives. That charge could no longer be made. The doors of the universities were now open wide and their franchise had been greatly extended.

The debate was continued for two days, and among those who spoke against the abolition of the university constituencies was Colonel Sinclair (Queen's University, Belfast), Miss Rathbone (Combined English Universities), and Sir Ernest Graham-Little (London University).

On a division taken on Tuesday, Feb. 3rd, the second reading of the Bill was carried by 295 votes to 230.

A Proprietary Medicines Bill.

The Parliamentary Medical Committee considered on Feb. 3rd the draft of a Bill, promoted by the Health Advisory Committee of the Labour Party, to regulate the manufacture, sale, and advertisement of proprietary medicines. The proposals, we understand, are of a drastic character going far beyond those of the Bill, which was read a second time in the House of Lords on July 29th, 1920, and not proceeded with. The text of this Bill, along with a transcript of the report of the Select Committee of the House of Commons on Patent Medicines, appeared as a special supplement to THE LANCET of Jan. 10th, 1925.

HOUSE OF COMMONS.

WEDNESDAY, JAN. 28TH.

Inspection of Imported Meat.

Mr. THORNE asked the Minister of Health on what grounds it was agreed at a recent conference held in his department that a relaxation should be made in the methods of inspection of mutton imported from Australia for caseous lymphadenitis, and that in future only 5 per cent. of Australian carcasses should be examined instead of 10 per cent. as formerly.—Miss SUSAN LAWRENCE (Parlimentary Secretary to the Ministry of Health) replied: At the conference which was recently held between Port Medical Officers of Health and Officers of my Department, it was reported that during the past year there had been a substantial improvement in the condition of mutton and lamb carcasses from Australia. It was therefore considered that the normal routine percentage examination of carcasses from this source might safely be reduced from 10 to 5 per cent. The arrangement is intended to operate for six months after which it may be reviewed; it does not, of course, affect the obligation on the officers of the port authority to make whatever further inspections may appear in any particular case to be desirable on grounds of public health.

THURSDAY, JAN. 29th.

Poor-law Relief in Dover.

His fiTINGS asked the Minister of Health if his attention
Taunton alled to the case of Mrs. Gertrude Elizabeth
1 Court, Dover, who died at the age of 34 from
and later senic l exhaustion from lack of suitable nourish-
Fulham-road. Wat this woman was in receipt of poor
THE LANCET, jointly taking to see that the relief granted
his first communicat authorities was adequate.—Mr.
which the pathology of e, at present, only seen a news-
and its relation to ade I am making inquiries and will
end as soon as possible.

Dr. HAS
has been ca
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Small-pox in London.

Rear-Admiral BEAMISH asked the Minister of Health whether the prevalence in London of small-pox had abated of late; and if he could compare London and other parts of the country in regard to this disease.—Mr. GREENWOOD replied: The weekly notifications of small-pox in London have been at about the same level for the last three months; they are, however, considerably lower now than in the corresponding period of last year. Relatively to the population the incidence of small-pox has recently been higher in London than in England and Wales as a whole.

Rear-Admiral BEAMISH asked the Minister of Health whether in recent outbreaks of small-pox in London the cases were found to have been vaccinated previously; and if he could give figures.—Mr. GREENWOOD replied: The large majority of the cases of small-pox in recent London outbreaks were persons in whom no evidence was found of vaccination prior to infection. Of the remainder, some were vaccinated during the incubation period of small-pox but too late to prevent the occurrence of that disease, and others had been vaccinated only in infancy. The latter were almost entirely adults, and included no person under the age of 11 years.

Mental Treatment Act.

Mr. KINLEY asked the Minister of Health whether it was proposed to make the experienced medical men from the existing public mental hospitals available as consultants in connexion with the developments under the recent Mental Treatment Act.—Mr. GREENWOOD replied: It is certainly hoped that, with the coöperation of the local authorities, the services of medical officers in public mental hospitals may become available, for example, in connexion with out-patient treatment and other developments under the Mental Treatment Act.

Flooding in Kensington.

Mr. WEST asked the Minister of Health whether his attention had been drawn to the flooding with sewage-tainted water of domestic premises in Kensington; whether plans had been prepared by the borough council of Kensington for the improvement of the main drainage system in the borough; and whether premises known to be liable to such flooding were still in use or had been evacuated.—Mr. GREENWOOD replied: I have made inquiry and understand that this flooding occurs only in times of very exceptional rainfall, and that the main sewerage system serving the borough is now otherwise sufficient. The premises which have experienced flooding are still in use, but any necessary cleansing has been done to the satisfaction of the local sanitary authority.

Royal Veterinary College.

Lieut.-Commander KENWORTHY asked the Minister of Agriculture whether he had now considered the copy of the resolution passed by the council of the National Veterinary Medical Association of Great Britain and Ireland, on Jan. 6th last, concerning the possibility of the closing down of the Royal Veterinary College in London and asking for assistance from the State; and whether he was considering taking action in view of the national and imperial importance of the college.

Mr. HANNON asked the Minister of Agriculture a similar question.—Major ATTLEE (Chancellor of the Duchy of Lancaster) replied: My right hon. friend has considered the resolution in question, but he regrets that he can add nothing to the reply which he gave on Nov. 27th.

Post of Pathologist Vacant in Lancashire.

Mr. KINLEY asked the Minister of Health whether he was aware that the post of pathologist in the area of the Lancashire Mental Hospitals Board had been vacant for several months; and whether he proposed to take steps to secure the filling of the post by a fully qualified pathologist.—Mr. GREENWOOD replied: I understand that this post is vacant. I hope that it will be filled, but the matter is wholly within the discretion of the Lancashire Mental Hospitals Board.

Employers and Health Insurance Contributions.

Mr. HAYDAY asked the Minister of Health how many insured persons had lost health insurance credit by reason of defaulting employers; in how many cases proceedings had been taken by the department against employers; and whether loss of credit, in these circumstances, was followed by loss of benefit to the insured person.—Mr. GREENWOOD replied: The information asked for in the first part of the question is not available. The number of cases in which legal proceedings for non-payment of health insurance contributions were taken against employers in England and Wales in 1930 was 1087, and in the great majority of those, although I cannot give the exact number e contributions were recovered and duly credited to the nsured persons. Loss of credit, where it occurs, does not ecessarily result in loss of benefit to the insured person, and n any event an insured person who has lost health insurance enefit through his employer's non-compliance is entitled nder Section 98 of the National Health Insurance Act, 1924, to recover from him the amount lost.

Local Authorities and Venereal Disease.

Lieut.-Colonel **Fremantle** asked the Minister of Health hether any representations had been made to him, under ection 104 of the Local Government Act, 1929, in regard to cal authorities who had undertaken no propaganda on the bject of venereal disease; the number of such authorities; nd what action he proposed to take to remind them of their owers and responsibilities in the matter.—Mr. **Greenwood** plied: I have received representations from one voluntary ssociation in regard to the need for further propaganda on e subject of venereal diseases by local authorities. The urveys now being made by Inspectors of my Department f the health services of local authorities include an investiga- on of the educational measures undertaken in each area health questions, including venereal diseases. If it ppears in any case that this matter is being neglected, ppropriate action will be taken, but until the surveys are mplete it will not be possible to say in how many areas no opaganda on this subject is being undertaken.

Insurance and Pensions Legislation.

Sir **Kingsley Wood** asked the Minister of Health when was anticipated that the inquiry into existing insurance d pensions legislation would be completed; and if any cisions had yet been made.

Mr. **Albery** asked the Minister of Health if he could make y statement regarding the general survey of the various tional insurance and pension schemes on which the overnment had been engaged since July, 1929.—Mr. **eenwood** replied: A report has now been submitted by e Committee and is under the consideration of His ajesty's Government.

Slum Clearance.

Mr. **Mills** asked the Minister of Health the number of um-clearance schemes confirmed up to date since the ssing of the Housing (No. 2) Act, 1930.—Mr. **Greenwood** plied: I have received from local authorities in England d Wales 95 resolutions declaring areas to be clearance eas within the meaning of Section I. of the Housing Act, 930.

Mr. **Day** asked the Minister of Health the number of slum- earance schemes confirmed in the London area since n. 1st, 1929; and the number of persons who would quire to be rehoused under these schemes.—Mr. **eenwood** replied: Resolutions have been passed declar- g 17 areas in London, occupied by 2174 persons, to be earance areas under the Housing Act, 1930. These solutions do not require confirmation by me. In addition, e improvement scheme under the old legislation, involving ovision of rehousing accommodation for 2632 persons, s confirmed after Jan. 1st, 1929.

Mr. **West** asked the Minister of Health what schemes for earance and improvement had been put forward by the rough of Kensington; how many persons would be ovided for by these schemes; and what was the estimated st to the ratepayers after allowing for Government ants.—Mr. **Greenwood** replied: The programme prepared the Metropolitan Borough Council of Kensington in rsuance of Section 25 (2) of the Housing Act, 1930, ntemplates that the schemes for clearance and improve- ent to be undertaken by the council during the next e years will result in the displacement of 400 persons. nderstand that the council have already passed resolutions claring two areas to be clearance areas; 275 persons ll be displaced from these two areas. It is not possible the present stage of the proceedings to estimate the cost these two schemes.

Mr. **McElwee** asked the Minister of Health whether he ould introduce legislation to enable tenants to be provided th alternative accommodation in all cases where houses re condemned and where a closing order had been tained.—Mr. **Greenwood** replied: Under the Act of 30 local authorities are given special financial assistance wards the provision of houses in the place of houses ndemned and demolished by action of the authority, and o not think that any such alteration in the law as my hon. end has in mind is required.

MONDAY, FEB. 2ND.

International Patent Drugs Agreement.

Lieut.-Colonel **Fremantle** asked the Secretary for Foreign fairs why His Majesty's Government had not yet become party to the international agreement revising the agreement of 1906 for the unification of formulas for patent drugs, when 14 other countries were able to do so by August, 1929.—Mr. **Dalton** (Under-Secretary for Foreign Affairs) replied: H.M. Government propose to accede to the agreement at the earliest date possible, but, in accordance with the practice established at the beginning of the present Parliament, accession is not possible until the agreement has been laid before Parliament for 21 days. The agreement was duly laid on the table on Jan. 20th.

Lieut.-Colonel **Fremantle**: That does not answer my question as to why this agreement, which was published on August 20th, 1929, was not laid on the table of the House at an earlier date.

Mr. **Dalton**: The matter has been under consideration, and as we have decided that we were sure to ratify we have taken proper steps to that end.

Lieut.-Colonel **Fremantle**: Meanwhile has action been taken under such articles as were appropriate, and have the Permanent Secretariat been asked to consult the Commissions of the various nations as soon as possible? Had that been delayed about 18 months, and is not that an unreasonable delay?

Mr. **Dalton**: The hon. Member had better put a further question on the Paper.

Extermination of Rats.

Sir **William Davison** asked the Minister of Agriculture what had been the result of the national rat week, held from Nov. 3rd to 8th last, and what was the estimated number of rats destroyed.—Dr. **Addison** replied: I have so far received reports on "rat week" from 295, or 43 per cent., of the local authorities; 79 per cent. of these have reported that action was taken with a view to drawing attention to the importance of destroying as many rats as possible, and to the best means of doing so. In a further 8 per cent. of cases it was reported that no special action had been taken as the work of destruction was continuous throughout the year. No statistics are available as to the estimated total number of rats destroyed during rat week, but it is believed that the efforts of last November resulted in heavy casualties.

Viscount **Lymington** asked the Minister of Agriculture whether, in view of the plague of rats prevalent in many parts of the country, he was prepared to urge immediate concerted action by all local authorities in trying to exterminate these vermin.—Dr. **Addison** replied: In a circular letter issued to all local authorities on Sept. 10th last the Ministry called attention to the desirability of making a special effort to secure concerted action in November, and asked for the whole-hearted coöperation and support of the local authorities for this purpose. If the hon. Member will be good enough to furnish me with particulars of any areas where rats are unusually prevalent at the present time, I will make representations in the matter to the local authorities concerned.

Disposal of London Refuse.

Mr. **Muggeridge** asked the Minister of Health what public health authorities of Essex in the area abutting on the Thames had made by-laws regulating the deposit of house and trade refuse within their boundaries; and whether he had approved such by-laws as sufficient to prevent the continuance of the present practice of dumping London's refuse within this area.—Miss **Susan Lawrence** (Parliamentary Secretary to the Ministry of Health) replied: Barking Town Urban District Council made by-laws on this subject some years ago, which were confirmed by my department. So far as my right hon. friend is aware no refuse from London is now tipped in that district. Orsett Rural District Council have recently made by-laws which are now under consideration, and Purfleet Urban District Council have by-laws in preparation. These by-laws are based on the precautions for the tipping of refuse recommended by my department.

Loans for Public Health Works.

Dr. **Morris-Jones** asked the Minister of Health whether applications for loans by public authorities in Wales for constructive works under the Public Health Acts were sanctioned or refused by him on the recommendation of the Welsh Board of Health.—Miss **Susan Lawrence** replied: Loans in respect of the following services are sanctioned by my right hon. friend on the recommendation of the Welsh Board of Health: tuberculosis sanatoria, venereal disease clinics, isolation and infectious diseases hospitals, maternity and child welfare centres, slaughter houses, markets.

TUESDAY, FEB. 3RD.

Strength of the R.A.M.C.

Lieut.-Colonel **Fremantle** asked the Secretary for War if he would state the establishment and present strength, respectively, of commissioned officers in the Royal Army

Medical Corps, distinguishing between permanent and temporary commissions; the number of permanent and temporary commissions now available; and the number of applications received for them up to Jan. 10th, 1931.—Mr. T. SHAW replied: Excluding quartermasters, the establishment of officers of the Royal Army Medical Corps, Regular Army, is 863. The number of officers at present in the Corps is 741, of whom 684 are regular officers, and the remaining 57 are temporary commissioned officers and retired officers who are employed to mitigate the shortage. There is no establishment for officers holding temporary commissions. Twenty-five vacancies for regular commissions in the Corps were offered last month, but only five candidates have come forward. The number of applicants for temporary commissions is very small.

Lieut.-Colonel FREMANTLE: Does the right hon. gentleman realise that that means that the Army is temporarily unfitted to take the field at the present time?

Mr. SHAW: I recognise that the shortage of medical officers is grave and that subject has been receiving very earnest consideration.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Feb. 9th.—5 P.M., UNITED SERVICES. Discussion on Antivenereal Prophylaxis in the Services. Opener: Surgeon-Cdr. H. R. B. Hull.

TUESDAY.—5 P.M., THERAPEUTICS AND PHARMACOLOGY. Discussion on The Use of High Carbohydrate Diets in the Treatment of Diabetes. Opener: Dr. E. P. Poulton.

THURSDAY.—8.30 P.M., NEUROLOGY AND PSYCHIATRY. Special discussion on Mental Symptoms Associated with Brain Tumours. Openers: Dr. W. J. Adie, Dr. Russell Brain, and Dr. Gordon Holmes, Neurology; Dr. R. D. Gillespie and Dr. F. Golla, Psychiatry. Other speakers will take part.

FRIDAY.—5.30 P.M. CLINICAL. (Cases at 4.30 P.M.) Cases: Mr. Cecil P. G. Wakeley: Generalised Paget's Disease with Sarcoma. Dr. A. D. Morris: Paget's Disease Complicated by Fractures. Dr. Bernard Myers: Effect of Insulin Treatment in a Woman with Diabetic Gangrene of the Foot. Effect of Insulin Treatment in a Boy with Diabetic Coma. Purpura in Diabetes. Dr. David Krestin: Mammary Secretion Associated with Enlargement of the Pituitary Fossa. Spontaneous Lactation Associated with Enlarged Pituitary Fossa. Benign Intrathoracic Tumour in a Boy. Mr. S. I. Levy: Tumour of the Neck for Diagnosis: ? Carotid Body Tumour. Dr. M. Schwartzman: Cases of Thrombo-angiitis Obliterans Treated with Muscle Extract. Dr. Philip Ellman: Pulmonary Asbestosis. Dr. E. Stolkind: Polycythemia Vera of 12 Years' Duration Treated by Blood-letting, Benzol, Rontgen Therapy, and Phenylhydrazine: Complications. Dr. H. V. Morlock: Banti's Disease with Rheumatic Endocarditis. Dr. G. L. Konstam: A Case of General Enlargement of Lymph Glands, Splenomegaly, Enlargement of the Head with Œdema of the Face. Dr. Terence East: Congenital Cardiac Defect. Specimen of Gastric Ulcer. Sir James Dundas-Grant: Tuberculosis of the Larynx with Pain Relieved by Alcohol Injection of the Superior Laryngeal Nerve. Epithelioma of the Larynx with Pain Relieved in the Same Way. Tuberculosis of the Larynx with Pain Instantly Relieved by Galvano-cautery. Other Cases will be shown. 8.30 P.M., OPHTHALMOLOGY. (Cases at 8 P.M.) Mr. J. H. Doggart: Retinitis Proliferans Complicated by Retinal Detachment. Other cases will be shown. Papers: Mr. J. H. Doggart: Recurrent Vascular Keratitis of Unknown Origin. Dr. Rosa Ford: A Case of Retrobulbar Neuritis Masked by Choroiditis, and Due to Latent Sinusitis.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.

MONDAY, Feb. 9th.—8.30 P.M., Dr. I. W. Magill will introduce a discussion on the Choice of Anæsthetic.

WEST KENT MEDICO-CHIRURGICAL SOCIETY, Miller General Hospital, Greenwich, S.E.

FRIDAY, Feb. 13th.—8.45 P.M., Dr. F. M. R. Walshe: The Interpretation of Some Common Symptoms of Nervous Disease.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Feb. 10th.—9 P.M. (at the Great Western Royal Hotel, Paddington), Dr. H. R. Oswald: Reminiscences of Some Paddington Inquests.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Feb. 12th.—8.30 P.M., Dr. Hilda Weber: Some Mechanisms Operative in Psychotherapy.

BIOCHEMICAL SOCIETY.

SATURDAY, Feb. 13th.—5 P.M. (at the Lister Institute, Chelsea Bridge-road, S.W.), Communications.

ROYAL SANITARY INSTITUTE, 90, Buckingham Palace road, S.W.

TUESDAY, Feb. 10th.—6 P.M., Lieut.-Colonel William Butler will open a discussion on Recent Methods of Sewage Treatment.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb., 9th, to SATURDAY, Feb. 14th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, Mon., 4 P.M., free lecture by Mr. Herbert Paterson: Early Diagnosis of Gastric Cancer.—CANCER HOSPITAL, Fulham-road, S.W. Wed., 2 P.M., free demonstration by Mr. C. A. Joll: Carcinoma of the Stomach, Illustrated by Specimens and Cases.—MILLER GENERAL HOSPITAL, Greenwich, S.E. Thurs., 3 P.M., free demonstration in Pathology by Dr. W. Smith.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Fri., 4.30 P.M., lecture by Mr. Rodney Maingot: Special Measures *before* Abdominal Operations.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Special Course in Gynæcology. Second week.—HOSPITAL FOR TROPICAL DISEASES, Gordon-street, W.C. Intensive Course.—Further particulars from the Fellowship of Medicine.

KING'S COLLEGE, Strand, W.C.

MONDAY, Feb. 9th.—5.30 P.M., Prof. J. Barcroft: Constancy of the Internal Environment (3).

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Feb. 12th.—9 P.M., Dr. E. H. Creed: Serum Therapy: Its Use and Abuse.

UNIVERSITY COLLEGE MEDICAL SCHOOL, University-street, W.C.

TUESDAY, Feb. 10th.—5.15 P.M., Dr. W. Cramer: Filtrable Tumours.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Agar-street, W.C.

SUNDAY, Feb. 8th.—10.30 A.M., Dr. R. A. Hickling: Diagnosis and Treatment of Glycosuria. 11.45 A.M. Mr. H. E. Batten: Injuries and Diseases of the Hip Joint.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Public Health Division), Keppel-street, Gower-street, W.C.

MONDAY, Feb. 9th.—5 P.M., Col. L. W. Harrison: Gonorrhœa.

WEDNESDAY.—5 P.M., Col. Harrison: Syphilis.

NORTH-EAST *LONDON POST-GRADUATE COLLEGE*, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Feb. 9th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Feb. 13th.—4 P.M., Mr. N. Asherson: Complications of Tonsillectomy.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Feb. 10th.—3.15 P.M., Mr. McNeill Love: Ward Demonstration.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

WEDNESDAY, Feb. 11th.—4 P.M., Mr. W. H. Ogilvie: Infections of the Hand.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Feb. 11th.—4 P.M., Dr. C. E. Lakin: Demonstration of Medical Cases.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

THURSDAY, Feb. 12th.—5 P.M., Dr. Sydney Owen: The Care of the New Born Baby.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Feb. 9th.—12 noon, Dr. Greenfield: Lipoid Dyscrasias of the Nerve Cells. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Intracranial Complications of Otitis and Sinusitis.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Adie: Migraine.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Chorea in the Adult.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Exercises.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Feb. 10th.—5 P.M., Sir E. *Graham-Little*: Cicatricial Alopecia.

THURSDAY.—5 P.M., Dr. H. *Haldin-Davis*: Pruritus. Prurigo. Lichenification.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

THURSDAY, Feb. 12th.—5.15 P.M. (at the Medical Society of London, 11, Chandos-street, W.), Mrs. Neville-Rolfe: Modern Marriage and Its Problems.

ST. MARY'S HOSPITALS, Manchester.

FRIDAY, Feb. 13th.—4.15 P.M. (at the Whitworth-street West Branch), Dr. W. Fletcher Shaw and Dr. J. W. Bride: Antenatal Demonstrations.

NOTES, COMMENTS, AND ABSTRACTS

SCOTTISH NATIONAL RED CROSS HOSPITAL AT BELLAHOUSTON.

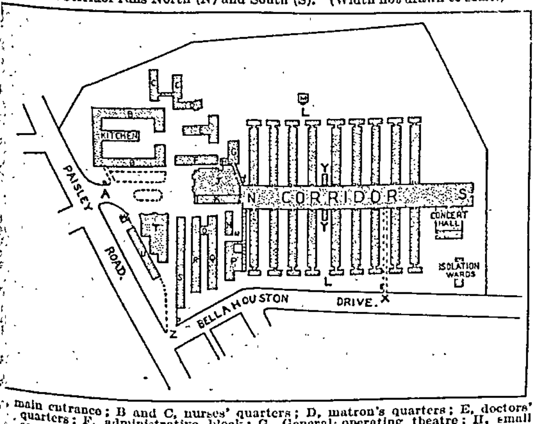
IN spacious Victorian times hospitals were built n massive blocks of masonry. These have proved xpensive to keep up and uneconomical in the return vhich they give in accommodation for the heavy apital outlay. With the war came the single-storey, avilion type of hospital, which could be erected heaply and quickly and could be duplicated easily, vithout increasing administrative buildings or general ervices. Experience of this type of building showed hat it had great value as a permanent structure. t the beginning of the war a central corridor and ungalow type of hospital was built at Cambridge, and vhen in 1915 the Scottish Committee of the Red Cross esolved to erect a large general hospital, they lecided to build on the Cambridge plan.

A site was furnished at Bellahouston Park, Glasgow, nd single-storey bungalows were built of asbestos heeting, the choice of material being largely determined y war conditions. The structure was completed in hree months and consisted, as the illustration shows, f a central corridor with ward blocks opening off it. Between the hospital proper and the main road were he offices, including recreation room, doctors' and urses' quarters, pathological department, operating heatre, and electrotherapy room. The hospital began vith 500 beds and its accommodation was increased o 1200 without any interference with its work. Each ward was complete in itself, having six small ooms at the corridor end—one for the sister, one or clerical work, one linen room, one ward kitchen, nd two rooms for special cases. Each was far enough rom the next to allow space to wheel the beds out into he open air. The central corridor could be expanded ndefinitely to allow more wards to be built. At its ar end was an entrance for the patients' friends, while he staff entered from the other end, where the dministration blocks lay.

Bellahouston Hospital has now been closed and dismantled, but so notably did it serve its day and its generation that Sir George Beatson has written an account of it in the *Glasgow Herald* in order that its story should be preserved from oblivion. Apart from its service to 15,000 sick and wounded in the war, the building has been an educative factor in hospital construction. With its 1200 beds it cost £100,000, and its memory will stand for a perpetual reminder of the effectiveness and simplicity of the corridor type of hospital building.

PLAN OF THE HOSPITAL.

Central Corridor runs North (N) and South (S). (Width not drawn to scale.)



main entrance; B and C, nurses' quarters; D, matron's quarters; E, doctors' quarters; F, administrative block; G, General operating theatre; H, small operating theatre; J, building for baths, massage, electricity, radiant heat; K, receiving block; L, ward blocks; M, bandstand; N, boiler house and destructor; O, billiard room; P, kitchen block; Q, dining and recreation block; R, orderlies' quarters; S, hospital stores; T, curative workshops; U, pathological block; W, garage; X, entrance for patients' friends; Y, nurses' cloak room; Z, entrance for stores.

REBUILDING SOMERS TOWN.

THE first block of the Sidney-street estate, built by the St. Pancras House Improvement Society, was recently opened. Forty flats are contained in the block, each one provided with adequate lighting, space, and ventilation, and furnished with an electric copper, cooker, iron, and kettle, as well as an electric heater which can be transferred to any of the rooms. A constant supply of hot water will simplify the housewife's work and make hot baths available at any time. The work of improvement is described in "Housing Happenings," the organ of the society, in which illustrations show the dilapidated buildings from which the tenants of the new flats are being drawn. Great projects are in hand for the cultivation of gardens in the overcrowded areas round Somers Town, and one of these is now being constructed in the courtyard at Drummond-crescent. Among other activities, the society runs a girls' club and a nursery school. The next block of flats projected in Sidney-street will have a new nursery school on the top floor with a roof garden adjoining. The work depends entirely on voluntary contributions.

IF IT HAD HAPPENED OTHERWISE.

AN undue sense of insignificance may be lessened by reflecting that at any moment any of us may inadvertently decide the fate of nations. The stream of events is easily turned aside by trifles; civilisations rise or decline because a statesman has a headache, a schoolboy upsets a bottle of ink, or a spider decides on safety first. Contemporaneously we never know what is going to prove important, but in retrospect it is fascinating to consider what would have happened if history had taken a slightly different turn and followed another of its infinitely numerous alternative routes.

Guesswork of this kind is apt to fail for want of imagination and scholarship, but these are happily combined in a book[1] of fictitious history now produced with J. C. Squire as editor. The essays here collected promise much by their names and authorship, but their performance is even more satisfactory. The more serious contributions deal with the continuation of persons and policies whose general trend is known. Thus Emil Ludwig supposes that the Emperor Frederick did not have cancer, allows him to recover from his famous illness, and avoids the late war by a judicious mixture of Bismarck's foreign policy with the Empress Victoria's English ideas of a liberal constitution. Milton Waldman, in one of the most brilliant and convincing essays of the book, shows us the end of Lincoln's career as it might have been if Booth's bullet had missed him. Winston Churchill (the English one) chooses much the same period and altogether changes European as well as American politics by making Lee win the battle of Gettysburg. H.A.L. Fisher gives Napoleon a South American empire and André Maurois offers him several different and ignominous ends as a result of the failure of the French revolution. Maurois holds that, after all, the present state of Europe would have been very much the same without the revolution, but Hilaire Belloc (who is in excellent vein) thinks that the escape of Louis XVI. at Varennes would have condemned us to fight the war of 1914 (with the Holy Roman Empire) in sailing ships. G. K. Chesterton is mainly concerned with the reunion of Christendom and offers posterity the perfect love affair in the marriage of Mary Queen of Scots and Don John of Austria. Harold Nicolson dethrones Byron the adventurer by making him an ineffective king of Greece, while Philip Guedalla, Ronald Knox, and the editor find scope for their exceptional talent as parodists.

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[1] If It Had Happened Otherwise: Lapses into Imaginary History. Edited by J. C. Squire. Longmans, Green and Co., London, New York, and Toronto. Pp. 289. 21s.

These Lapses into Imaginary History (as they are called) show once more that fiction can be as strange as truth and quite as instructive. In some ways it is rather more amusing, and Mr. Squire's venture is undoubtedly going to give a lot of pleasure all round.

THE EARTHQUAKE IN NEW ZEALAND.

THE disastrous earthquake in Hawke's Bay Province, North Island, New Zealand, has struck Napier, the chief city of the provincial district, and many fine buildings and private residences have suffered severely. Hastings, 12 miles distant, is also involved in the catastrophe. There are 20 medical men in Napier and eight in Hastings, and, for the sake of others as well as of themselves, we trust they have escaped injury.

Appointments

ATKINSON, E. M., F.R.C.S. Eng., M.B., B.S.Lond., Hon. Surgeon to the Royal Mineral Water Hospital, Bath

BRETT, H. C. M., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for the Cranbrook District of the County of Kent.

GALBRAITH, J. J., M.D., Ch.B. Edin., D.P.H., Medical Officer of Health for County Ross and Cromarty.

HALLIDAY, J. L., M.D. Ch.B. Glasg., D.P.H., a Regional Medical Officer (Medical Referees) to the Department of Health for Scotland.

RIDDELL, J., M.B. Ch.B. Glasg., Asst. Medical Officer for the County of Stirling.

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Hon. Asst. Medical Electrician and Radiologist.

All Saints' Hospital, 91, Finchley-road, N.W.—Hon. Asst. Surgeon.

Barnsley, Beckett Hospital and Dispensary.—Cas. O. Also H.P. £250 and £200 respectively.

Barry, U.D.C. Surgical Hospital.—H.S. £200.

Bedford County Hospital.—Asst. H.S. At rate of £130.

Bedfordshire County Council.—Deputy County M.O.H. and Sen. Asst. School M.O. £750.
50 gns.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—Asst. Surg.

Birmingham, Erdington House Poor-law Institution, &c.—Res. M.O. £850.

Birmingham and Midland Eye Hospital.—Res. Surg. O. £110.

Birmingham City Education Committee.—Director of Child Guidance Clinic and Special Schools M.O. £600–£700.

Bristol City and County Mental Hospital.—Third Asst. M.O. £350.

Bristol Royal Hospital.—Radium Officer. £600.

Canterbury, Kent and Canterbury Hospital—H.S. At rate of £125.

Carlisle, Cumberland and Westmorland Mental Hospital, Garlands.—Jun. Asst. M.O. £350.

Chester Royal Infirmary.—H.S. to Ear, Nose, and Throat Dept. £150.

Chester, Wrenbury Hall Tuberculosis Training Colony.—Res. H.P. £250.

Coventry and Warwickshire Hospital.—Res. H.P. £160.

Coventry City Municipal Hospital.—Second Asst. M.O. £250.

Coventry, Municipal Hospital.—2nd Asst. M.O. £100.

Denbigh, North Wales Sanatorium, Llangwyfan.—3rd Asst. Res. M.O. £250.

Derby County.—Deputy County M.O.H. £840.

Derby, Derbyshire Royal Infirmary.—Two H.S.'s to Special Depts. Also Ophth. H.S. Each £150.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Surgeon to Nose, Throat, and Ear Dept.

Evelina Hospital for Children, Southwark, S.E.—Hon. Dental Surgeon.

Gloucestershire Royal Infirmary and Eye Institution.—2nd H.S. At rate of £120.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £300.

Hull Royal Infirmary.—H.P. for Sutton Branch. At rate of £160.

Inverness Royal Northern Infirmary.—H.S. At rate of £100.

Lewisham Hospital, High-street, Lewisham.—H.P. £80.

Liverpool, David Lewis Northern Hospital.—H.S. two H.P.'s. Each at rate of £100.

Liverpool, Royal Children's Hospital.—Res. M.O. and 2nd Res. M.O. for Heswall Branch. At rate of £180 and £120 respectively. Also two Res. H.P.'s and two Res. H.S.'s for City Branch, Myrtle-street. All at rate of £100.

Liverpool Eye and Ear Infirmary, Myrtle-street.—Ophth. H.S. £100.

Liverpool, Royal Southern Hospital.—H.S. At rate of £60.

L.C.C.—8th Asst. M.O. for Mental Hospitals Service. £445.

London Hospital, E.—Surg. 1st Asst. and Reg. £300.

Maidstone, Institution for Mental Defectives, Leybourne Grange.—Res. Med. Supt. £700.

Manchester Royal Infirmary.—H.S. for Central Branch, Roby-street. £100–£200.

Manchester Victoria Memorial Jewish Hospital, Cheetham.—Jun. H.S. At rate of £125.

Margate and District General Hospital.—Res. M.O. £125.

Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—Clin. Asst.

Metropolitan Hospital, Kingsland-road, E.—Physician.

Newcastle General Hospital, Newcastle-upon-Tyne.—H.P. At rate of £100.

Nottingham County Sanatorium, Sherwood Forest.—Med. Supt. £650.

Nottingham Hospital for Women.—H.S. At rate of £150.

Nottinghamshire County Council.—Med. Supt. for Ransom Sanatorium. £650.

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.

Plymouth, South Devon and East Cornwall Hospital.—Res. Anæsthetist and H.S. to Spec. Depts. At rate of £100.

Poplar Metropolitan Borough, Maternity and Child Welfare Clinics.—Part-time M.O. 1½ gns. per session.

Prince of Wales's General Hospital, N.—Hon. Surg. Reg. £100.

Queen's Hospital for Children, Hackney-road, E.—Second Surg. to Ear, Nose, and Throat Dept.

Royal Northern Hospital, Holloway, N.—Hon. Surg.

St. Bartholomew's Hospital, E.C.—Dental H.S. £80.

St. Benedicts Hospital, Church-lane, Tooting, S.W.—Asst. M.O. £250.

Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Res. Anæsthetist. £80–£100.

South Shields, Ingham Infirmary.—H.S. £150.

St. Thomas's Hospital.—Chief Asst. to Throat Dept.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. £150.

Surrey County Council.—Asst. M.O. £600.

Swanley, Kent, Hospital Convalescent Home.—Res. M.O. At rate of £200.

Tilbury Hospital, Essex.—H.S. At rate of £150.

Tunbridge Wells and Counties General Hospital.—H.S. £160.

Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of the Chest.—Asst. Res. M.O. At rate of £300.

Wakefield, West Riding Mental Hospital.—Jun. Asst. M.O. £400.

West Bromwich and District General Hospital.—Hon. Physician and Hon. Surgeon. Also H.S., H.P., and Cas. H.S. All at rate of £200.

Weston Super-Mare General Hospital.—Res. H.S. At rate of £150.

Winchester, Royal Hampshire County Hospital.—Sen. Res. M.O. £200.

Wolverhampton, Royal Hospital.—H.S. for Ear, Throat and Nose Dept. At rate of £100.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Stock (Essex).

Births, Marriages, and Deaths

BIRTHS.

CRESWELL.—On Jan. 25th, the wife of H. E. Creswell, M.B., M.C., of Rosignol, Glencoe, Natal, South Africa, of a son.

HAMBER.—On Jan. 27th, at Lowlands, Fordingbridge, Hants, the wife of J. F. Hamber, M.R.C.S., L.R.C.P., a son.

DEATHS.

CRISP.—On Jan. 29th, of pneumonia, Ernest Henry Crisp, B.A., M.R.C.S., L.R.C.P., of Harley-street, W.

GALE.—On Jan. 29th, Thomas William Gale, L.D.S., R.C.S.I., of Lichfield-grove, N., and Devonshire-street, W., in his 84th year.

HOFFMAN.—On Jan. 31st, 1931, at The Red House, Cranham, Gloucester, Arthur Herbert Hoffman, aged 75.

LEITCH.—On Jan. 27th at Highgate, Prof. Archibald Leitch, M.D., Director of Research, the Cancer Hospital, London, aged 52.

WILSON.—On Jan. 27th, at Great Russell-mansions, W.C., Dr. Samuel Wilson, late of Mare-street, Hackney, and "Chesterleight," Boscombe.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

ADDRESSES AND ORIGINAL ARTICLES

SUCCESSFUL GRAFTING OF THE CORNEA IN RABBITS.*

BY J. W. TUDOR THOMAS, M.D., B.SC. WALES, M.S. LOND., F.R.C.S. ENG.,

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THE history of corneal transplantation dates back to 1813 when Himly made the suggestion that transplantation of cornea from one animal to another might be done. An operation of this nature appears to have been performed for the first time in 1818, 112 years ago, by Reisinger, who removed the whole of a rabbit's cornea and reapplied it with the lids closed. Following this attempt, many others tried similar operations, but Dieffenbach in 1834 summarised the position by stating that in his opinion the transplant would either fail to adhere, or, if it did adhere, it would become opaque.

Earlier Attempts.

These early attempts were of course made without the advantages of more recent knowledge of anæsthesia and asepsis; Bigger in 1835 performed an operation for corneal transplantation on a gazelle, and describes how the animal had to be fixed in a box, but in spite of this, its struggles rendered the operation very difficult. Bigger also operated on rabbits but was much disappointed with the chances of retaining transparency in the graft. He appears, however, to have had one successful result, which he attributed largely to the use of bichloride of mercury solution after the graft became adherent. Some other operators about this date reported more encouraging results, but Feldmann in 1844 published a paper on the subject in which he cast considerable doubt on the sincerity of these reports. Feldmann's own experience was, that of 20 cases operated on, seven united and all these were opaque.

Kissam in 1844 described how he attempted to transplant a portion of the cornea of a pig on to the staphylomatous eye of a man but without success; he cut the graft larger than the gap to be filled, the reason being, to quote his own words, ". . . . from the delicacy of the parts, it would be utterly impracticable to fit, in an aperture, a piece of foreign substance equally delicate." In regard to the absorption and disappearance of the graft that he transplanted, he says, ". . . I believe that had the internal structure of the eye been perfect, no absorption would have occurred, because what is necessary is generally preserved; unnecessary parts nature does not long preserve."

At the International Ophthalmological Congress held in London in 1872, Henry Power, of St. Bartholomew's Hospital, read a paper on Transplantation of the Cornea; his own attempts on animals and men were unsuccessful, although in one case he describes the graft as being tolerably clear. He used at first a cork-borer for removing the graft, and later used a steel punch. The cats and the rabbits that he operated on all died of pyæmia.

Von Hippel in 1886 published the results of 12 years' work on transplantation of the cornea and came to the conclusion that if the whole thickness of the cornea was removed, the aqueous found its way between the curled up cut ends of Descemet's membrane and infiltrated the graft, causing it to become opaque. He therefore gave up the whole thickness operation in favour of an operation by which only the superficial layers of the cornea were removed, retaining Descemet's membrane intact. He appears to have had success operating in this way, utilising his trephine for marking out the graft, and taking the graft from the cornea of a rabbit. He claimed that after all the attempts made to that time, he had shown the possibility of transplanting cornea with some measure of success, and remarked on the scientific interest of an answer to a question which had occupied in vain for 60 years the most eminent surgeons.

Frohlich in 1893 operated by von Hippel's technique on six men, but all the cases were failures, and Cole in 1894 said that trephine methods were so unsatisfactory that few continued to use them and considered that it was impracticable to remove the cornea down to, but not through, Descemet's membrane. He suggested that the graft should be definitely larger than the gap into which it was to be placed, and that the eye of a dog should be removed to provide the graft.

The difficulty of doing von Hippel's operation led to experiments in which the insertion of an artificial cornea made of celluloid or glass was tried, but they were useless. Zirm in 1906 obtained a transparent graft which was held in place by a stitch passing over it, and Magitot in 1912 said that there were about half a dozen successes in corneal transplantation in the history of 100 years; he thought that the best results were obtained with partial thickness grafts, and Walker in 1917 thought that perforating the anterior chamber was the leading cause of failure.

Ebeling and Carrel in 1921 reported one clear graft in a cat. Fuchs in 1923 reported two clear grafts out of 28 cases, and Elschnig in 1923 reported nine clear grafts out of 92 cases. Ask published one successful case in 1921 and another in 1925. Frieberg in 1928 refers to the successes obtained in some cases by Elschnig and Magitot when using a partial thickness bed for the graft but comments on the technical difficulties in preparing such a bed, as well as the difficulty of determining the transparency of the deeper layers of the cornea before the operation. Frieberg gives his own experience of penetrating corneal transplantation comprising nine operations, two of which resulted in good vision; the grafts were cut with trephines, and were either equal in size to, or larger than, the gaps prepared for their reception. Elschnig in 1930 published his experiences of 20 years of corneal grafting. He used von Hippel's method of penetrating corneal transplantation with a mechanical trephine. The graft is placed into the gap prepared for it in the cornea, and a suture from the conjunctiva is laid over it for two days. He had performed 174 operations of this nature up to July, 1929, and his results are a great advance on those of previous workers. He obtained 34 clear grafts out of his 174 cases, while 39 were only partially cloudy. Cases of interstitial keratitis proved to be the most successful in his experience, as he obtained 17 clear grafts out of 26 cases operated on. He operated on 113 cases of opacities in the cornea following burns or ulcers, and obtained 15 clear grafts, but in 22 cases the graft failed to unite.

New Experiments.

My own experimental work on this subject commenced in May, 1922, and for the past eight and a half years I have carried out many experiments on rabbits in order to investigate the factors which influence the union and healing of corneal grafts, and, if possible, to determine a method by which transplantation of the cornea can be successfully performed. The experimental work has all been done in the physiological department of the Welsh National School of Medicine at Cardiff (assisted from June, 1930, by a grant from the Medical Research Council). I would like to express my indebtedness to Prof. Graham Brown, the head of that department, who has so kindly provided me with every facility for the performance of the experiments. The experiments were carried out on healthy rabbits, and consisted of transplanting either the whole or part of the cornea. The grafts were of the whole thickness of the cornea and were obtained either from the rabbit operated on or from another rabbit.

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*Hunterian Lecture delivered before the Royal College of Surgeons of England on Jan. 23rd, 1931.

Many operative procedures were tried, and much better results were obtained by one method than by others. When this work was begun in May, 1922, it was recognised that the problems which were to be solved were difficult and had been universally regarded as such, and indeed the results of previous workers on the subject of corneal transplantation had not indicated any definite lines upon which the experiments should proceed. I propose now to give a short account of 92 experiments that I have carried out for corneal transplantation. These will be divided into six main groups, according to the type of operation performed.

FIRST TYPE.

This group consists of seven rabbits. In one of these, the graft consisted of a horizontal strip of cornea with a conjunctival flap at each end. In the other six the whole of the cornea was transplanted together with a certain amount of conjunctiva. Four out of the seven grafts became united and healed. The cornea in these cases remained fairly transparent for some days and then became clouded. Ulceration took place in the centre of the cornea, and the ultimate state of the transplanted cornea was such that no useful visual function resulted, although there were small areas consisting of partially clear cornea, but the central portion of the cornea was opaque. The widest portion of more or less clear cornea was about 3 mm., and on this account the grafts in the next group of experiments were made about 6 or 7 mm. square.

SECOND TYPE.

This group consists of 17 experiments, the common factor being that the graft was either central or paracentral and was held in place by stitches passing through the margin of the graft and the margin of the adjacent cornea. One of the rabbits died at the sixth day, and so has to be discounted. Of the remaining 16 grafts, nine united and seven failed to unite. None of these was clear but in two of them the opacity was not dense and could be described as nebulous. The remaining seven were opaque. There was a definite tendency for the iris to become adherent to the cornea, and it was noted that when this occurred opacity of the cornea invariably resulted. The insertion of stitches into the graft is inevitably accompanied by a certain amount of damage to the graft itself, and to minimise this damage various devices were tried by which the graft was supported—e.g., on a piece of linen tightly stretched over a small drum—to counteract the pressure of the needle and to avoid the necessity of gripping the edge of the graft with forceps. It is interesting to note that Bigger, in 1837, used a cork in a similar way to counteract the pressure of his needle.

It was also noted that there was a great tendency, when stitches were inserted to develop a line of tension across the graft in one direction or other, which was evident at the end of the operation. This line of tension made one or two stitches cut out, so that a portion of the margin of the graft did not unite. In every case this part of the graft became swollen, and even after union had taken place was quite opaque, while in some cases the separation of the graft would increase from this spot, so that it became more or less completely detached.

THIRD TYPE.

This group consists of seven rabbits in which no stitches were used to secure the graft in place, and the margins of the graft were cut in a shelving manner in the belief that in this way union would more readily take place on account of the increased area of the cut surfaces in apposition to each other. All the grafts were autoplastic, and a Gillette razor blade was used for the removal of the graft. The graft was pressed on to the bed prepared for it, and after a few minutes interval a drop of sterile olive oil was placed on the surface.

Of the seven grafts, four became united while thre failed to unite. Of the four grafts that united, one w opaque with an adherent iris; one, in which the iris wa not adherent, was just nebulous; in another, a portio of its margin was raised and white at the elevent day and the graft became practically opaque. In th remaining one, the lower margin was separated soo after the operation and the iris was adherent; fo years later the lower two-thirds of the graft w opaque, while the upper third, to which the ir had not been adherent, was clear. There was a tendency in all these grafts for slight bulging to tak place on account of the intra-ocular tension. Th opacity that resulted in these grafts was mostly in th deeper layers, while the superficial layers and th surface epithelium tended to be transparent.

These seven experiments showed that a graft ca adhere fairly well when the edges are cut in a shelvin manner, even when no stitches are used to secure it i place, and even when olive oil is applied as a lubrica to the graft soon after the operation.

The results up to this stage had been so po that I was prompted to perform an experiment wi the object of determining whether, by retaining minute pedicle of corneal tissue, it was possible keep a graft transparent.

An incision was made in the cornea of a rabbit, in t orm of a rectangle, penetrating the whole thickness of t cornea but retaining at the posterior superior cor pedicle 2 mm. in diameter. The sides of the rec measured 7½ by 4 mm., and its position was acr centre of the cornea. The flap was then secured in by four stitches. The flap united well and in time be transparent with the exception of a marginal scar.

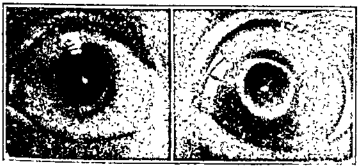
The pedicle was only 2 mm. wide, and yet this s amount was sufficient to enable the graft to live and remain transparent.

Observations on the return of sensation to the g showed that three weeks after the operation the 2 m pedicle allowed sensory nerve impulses to pass from an a measuring 3½ by 2½ mm. After that time the sensi area extended by 1 mm. every fortnight, so that the rem ing 5 mm. of graft regained its sensitivity in 70 days

The animal was killed two years and four months a the operation. Microscopic examination showed that new membrane had been formed behind Descemet's me brane, fusing with its posterior surface; this new memb was formed over quite a large area, and where it from the graft to the adjoining cornea it gave an ance as if the graft's Descemet's membrane had split two layers.

This experiment shows what a great difference is between a complete and an incomplete detac of a portion of cornea, and how the retention of a small pedicle of corneal tissue is a material help in revitalising the graft. If this small 2 mm. pedicle had not been retained, my own experience experimentally is that with the same method of stitching as that employed in this case the graft would have been opaque, whereas actually it was clear, except for a marginal scar.

FIG. 1. FIG. 2.



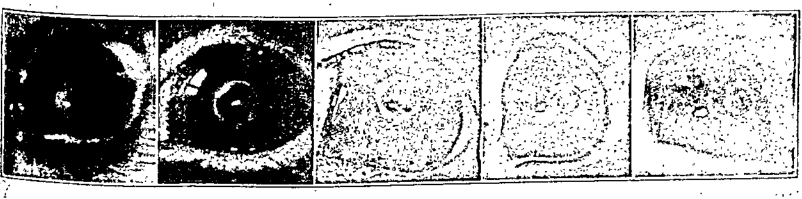
Two clear grafts in Group A at 14 months.

Wolfe in 1872, when operating on a case of traumatic cataract, found that his incision in the cornea had nearly completed the third side of a triangle, the other two sides of which were formed by corneal wounds, the presence of which he had overlooked. This little triangular flap with a small pedicle also became united and remained clear.

FOURTH TYPE.

This group consists of 18 rabbits; the graft in each case being taken from the margin of the cornea, triangular or quadrilateral in shape, and united to the cornea by stitches; a wide iridectomy was performed with the object in view of preventing adhesion of the iris to the graft. In 13 of the 18 rabbits the grafts became united and in five they did not take. Two out of the 13 did not live long enough for the ultimate results to be observed, but of the remaining 11 two showed a clear area for about two-thirds of the graft, while the other nine were opaque. The two grafts with a clear area were the first two to be done by this method, and at first it seemed very encouraging, but although the operations on the remaining rabbits of this group were carried out in a similar way, this good result could not be repeated. One concluded, therefore, that this was not a method that was likely to produce consistent results, and that there was a large element of uncertainty associated with it. In some of the rabbits of this group olive oil was used during the operation, and the results in these rabbits, compared with the others, indicated that the use of olive oil did not add to the risks of failure.

FIGS. 3 4 5 6 7



Five clear grafts in Group D.

It is interesting to note that out of nine grafts where five stitches, or less, were used, four grafts failed to unite, whereas of the other nine, where six or more stitches were used, only one graft failed to unite.

These results appear to be in agreement with the view already expressed, that the insertion of stitches is liable to produce a line of tension along the graft itself, which is very undesirable. Thus when fewer stitches are used, the responsibility of each stitch is great, and as the effect of a line of tension is to make the stitch cut out a large gap will result, which is likely to lead to complete failure. If more stitches had been used, the responsibility placed on each one would be less, and if a stitch cut out, the gap would be more likely to be small and possibly might not prevent the graft from uniting, although it would prejudice the result in regard to transparency.

In the next group of experiments an attempt was made to secure fixation of the graft without the insertion of stitches into its substance, at the same time providing the necessary support to withstand the intra-ocular pressure.

FIFTH TYPE.

Under this heading are included 16 experiments. In each case the graft was secured in place by stitches inserted in the substance of the adjoining cornea and passing over the graft on its anterior surface to take a similar hold in the cornea on the opposite side, the ends then being tied together. In three of these rabbits one stitch of this nature was used to secure the graft in place. Two of these grafts became displaced about the fifth day, and in the case of the third graft one margin at first failed to unite, and although the iris was not adherent, the graft became opaque.

It appeared from these three experiments that there was a tendency for the graft to slip away from the stitches, and that one stitch of this type was not sufficient to secure it in place. For this reason, each of the remaining 13 grafts was secured by two stitches of the type described, passing across the graft at right angles to each other, the two portions of each stitch being parallel to each other. Of the 13 grafts, six became united and seven did not unite. The grafts were homoplastic, and olive oil was used in each case. Of the six grafts that united, one had a clear central area when the animal was killed three months after the operation. This was the only one in which the iris was free from the commencement, and was the only one which had a small clear area, the other five grafts being opaque.

The grafts in these 16 rabbits were square or rectangular in shape, and there was a tendency for a corner of the graft to protrude. The pressure of the eyelids or the nictitating membrane on the protruding portion tended to cause a certain amount of detachment of the graft, and therefore in the next group of experiments a round graft was used. It was found in several of the grafts that one loop or other of the stitches would slip away from the surface of the graft and come to lie in the groove between the graft and the cornea. This was very undesirable, as it interfered with the proper union of the graft at this spot, and consequently in the next group of experiments the stitches were inserted so that the loops of each stitch, instead of being parallel, were made to cross each other.

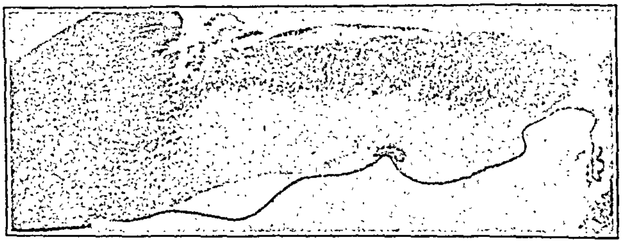
A review of the experiments seemed to indicate that the eighth day was about the optimum time for the removal of the stitches, and in most of the experiments in the next group this was the routine adopted.

SIXTH TYPE.

The grafts to be described under this heading may be divided into four groups. The common factor to all is the method of stitching used to secure the graft in place. This method I have referred to elsewhere as "cross-stitching." Two sutures are used, each taking a grip in the substance of the cornea, passing over the graft to take a similar intracorneal grip on the other side, and the ends tied together so that the loops of the stitch form a cross over the graft. In this way the graft is held down at eight points on the margin, while all the stitches cross at the centre of the graft. By this method it was much less likely that a loop of the stitch would lie in the groove between the graft and the cornea, and the graft would be less likely to slip out of place.

Group A consists of ten rabbits, two of which were killed at an early date for microscopical examination of the eyes, and have to be discounted. The portion of cornea to be grafted was removed with the aid of a Graefe knife and scissors and the gap in the cornea was prepared in the same way. The graft was either equal in size to or slightly larger than the gap, and the margins of both graft and gap were cut in a shelving manner. Of the remaining eight, five grafts became united and three were partly detached. Of the five grafts that took one was opaque, one had a small central area of about 2 mm. that was practically clear, one had a central clear area measuring about 2 by 3½ mm., and the other two grafts were clear (Figs. 1 and 2).

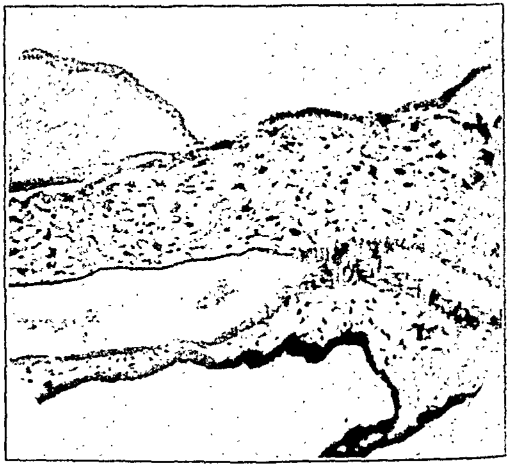
FIG. 8.



Fourth type. Unsuccessful marginal graft at seven days. Showing loss of superficial layers and invasion from the anterior surface by leucocytes and epithelioid cells. Magnification ×26.

The results of Group A indicate that the cross-stitching method is an improvement on the other methods of securing the graft in place. Care has to be taken, however, in tightening the stitches; if they are tied too loosely, the graft is not kept sufficiently firmly in its bed; if they are tied too tightly, the graft is apt to be badly cut by the pressure of the stitches, with consequent harmful effects. It was noted, however, that the graft can sometimes recover to quite a large extent from the cuts caused in this way, and one of the two grafts that had a central area which was nearly clear had been badly cut by the stitches.

FIG. 9.



Sixth type at 14 days. Graft has become displaced. Epithelium has grown over the gap on the surface of the adherent iris. Structure of endothelium in the wall of a blood-vessel in the iris can be seen. Mag. ×91.

The relative size of the graft and the gap in which it is placed influences the extent to which the graft may be cut by the overlying stitches. If the graft is cut larger than the gap, there is more tendency for it to bulge, and the cutting by the stitches is accentuated.

Realising the importance of knowing the exact size of the graft and the gap in the cornea, so as to be able to make more exact deductions from the experiments, the remaining grafts and the beds in the corneæ prepared for their reception were outlined by trephines of known diameter.

Group B.—The two grafts in this group were outlined with a trephine measuring nearly 5 mm., and the grafts removed by scissors after opening the anterior chamber by means of the trephine. The gap in the cornea was prepared in the same way, using the same trephine. The margins of both the graft and the corneal gap were cut in a shelving manner. Both the grafts became united but neither became transparent; one was definitely opaque and the other was nebulous. The opaque graft had been badly cut by the overlying stitches and there was an adhesion of the iris, through which the graft became vascularised. The graft in which the opacity was not dense had not been cut by the stitches, and the adhesion of the iris which was present had become resolved into more or less atrophic elongated bands.

In the light of these experiences, it seemed important to minimise the mutilation of the graft by the pressure of the stitches. It appeared that some swelling of the graft took place during the early days after the operation, and consequently there was a tendency for the graft to bulge if it were cut of equal size to the gap in the cornea. This caused increased pressure on the graft by the stitches, which rendered the stitches more liable to cut into it. For this reason unequal trephines were used in the next group.

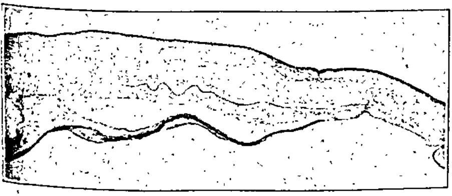
Group C consists of two rabbits, the graft in each case being removed with a trephine and scissors, but the trephine used for outlining the graft was half a millimetre less in diameter than that used for outlining the bed prepared for its reception. Both these grafts became united, but neither was clear. One was just nebulous when the rabbit died two and a half months after the operation, and the opacity seemed to be getting less. The iris was adherent. The other had a small central area which was nearly clear when it died three weeks after the operation; the iris was not adherent but the graft had been cut to some extent by the stitches.

Group D consists of 13 grafts, three of which have to be discounted owing to early death of the animal and accidental damage. Of the remaining ten grafts, seven were operated on by a particular technique, which proved to be the best type of operation in this group. In the case of the other three grafts, experimental departures from this technique were tried but did not prove successful, for two of them failed to unite and the remaining one was opaque.

The remaining seven grafts, operated on by the best technique, were all removed with the aid of trephines and scissors. The method employed was similar to that used in Group C, but with slightly smaller trephines than those used in Group C, and the difference in size between the trephines was slightly less. The smaller trephine was used for outlining the graft, and the larger one for outlining the piece of cornea removed. The graft in each case was held in place by the "cross-stitching" method already described. The margins of the graft and of the bed prepared for it were in each case made shelving.

Each one of the seven grafts became united; only one was opaque; one showed a small central clear area, and the remaining five were transparent or nearly so. The opaque graft had a well-marked adhesion of the iris to the graft, whereas four of the clear grafts had either no adhesion of the iris or the adhesion was very small and became freed in less than three weeks.

FIG. 10.



Type 6B at three months. Showing extensive adhesion of the iris with new tissue deep to Descemet's membrane. Mag. ×18.

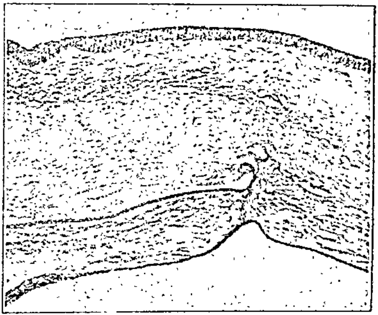
In the case of the fifth graft, described as being clear, the iris was adherent but not extensively so, and although this graft was sufficiently clear to enable one to see the iris through it quite easily, it was not entirely free from a slight haziness. Two of the five clear grafts were among those demonstrated at the Ophthalmological Society Meeting in April last year, and one of these is now preserved in the Museum of the Royal College of Surgeons of England (Figs. 3 to 7).

The results of the technique adopted for the seven rabbits referred to are by far the best that I have obtained by any method.

SUMMARY.

After allowing for those experiments which have to be discounted for reasons that have been given, a comparison between the percentage of grafts that became united in the six main types of operation that have been described shows that of the 17 central grafts secured by stitches joining together the cut edges, 56 per cent. became united, while of the seven central grafts with shelving edges, where no stitches at all were used, 57 per cent. united, which is at least as good a result as that obtained where stitches were inserted into the graft. Of the 18 marginal grafts, 72 per cent. became united, and of the 22 grafts where "cross-stitching" was used to secure the graft in place. 77 per cent. became united. The best results, however, were obtained in the case of the seven rabbits operated on included in Group D of the "cross-stitching" operation, where all the grafts became united and five were clear, only one being definitely opaque.

FIG. 11.



Enlarged view of Fig. 10 at the end of the graft's Descemet's membrane. Mag. ×83.

Requirements for Grafting.

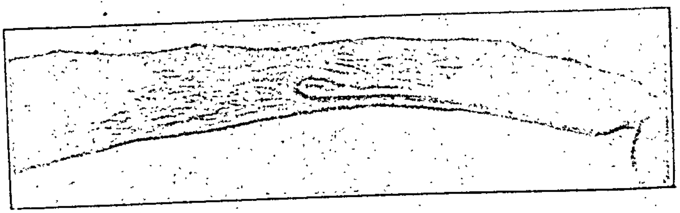
In my experiments carried out on rabbits, using homoplastic grafts, the question of blood grouping, of course, does not arise. I have, however, succeeded in transplanting a corneal graft taken from the eye of a cat on to a rabbit's cornea, but the graft was not transparent. It had a fairly marked adhesion of the iris, which of itself would account for opacity, and was vascularised by blood-vessels coming from the adherent iris and a few from the conjunctiva. The graft became well united and flat, but was quite opaque when the animal died one month after the operation. I also transplanted a portion of human cornea on to a rabbit's eye. In this case the graft united well, although one margin was at first a trifle raised above the general corneal surface. The iris was free, but a few blood-vessels reached the graft from the conjunctiva and caused the graft to become pink in colour. When the animal died three months after the operation the graft was opaque. The failure of these two grafts is in accord with the accepted view in regard to heteroplastic grafts.

Insertion of stitches into the cornea is not universally regarded with favour, but it is my experience that stitches inserted according to the operation I have described are tolerated by the cornea fairly well.

In transplantation of the cornea, as in transplantation of other tissues, one desirable result is that the graft should unite, but if a corneal graft is to give any useful visual result its transparency must also be retained. One has to remember that the nutrition of the graft is derived simply from the margins, and as the cornea is barely 1 mm. in thickness, and less than that in the case of the rabbit's eye, the surface area from which nourishment can be obtained is very small. This surface area is considerably increased when the margins of the graft are prepared in a shelving manner, and it seems that in this way the vitality of the graft is better preserved.

In order that the graft should become properly united, the marginal surfaces should be in accurate apposition with each other and retained securely in that position for at least eight days, and in order to effect this, it is far better to utilise "cross-stitching" than to insert stitches into the graft itself.

FIG. 12.



Fifth type at 16 months to show a new Descemet's membrane bridging over the gap, and passing behind the curled up cut ends of Descemet's membrane of both the graft and the cornea to fuse with their posterior surfaces. Mag. ×55.

In the case of other grafts, such as skin grafts, a certain amount of pressure is necessary in order to obtain union as speedily and surely as possible, and the graft must be retained securely in place and not subjected to the ill-effects of movement during the period when union is being established. These two conditions are satisfied by the "cross-stitching" method of securing the graft in place. The stitches are tied so as to exert a fairly firm pressure on the graft, which thus becomes, as it were, wedged into place. During the next week or so, two influences are at work which to some extent compensate each other; the swelling which takes place in the graft is to some extent balanced by a certain amount of loosening of the stitches due to the pull exerted on the intra-corneal portion of each stitch. The graft fits snugly into its bed. It cannot move backwards because it is supported at the margins by the sloping bed on which it rests, and because the intra-ocular pressure supports it.

The maintenance of the intra-ocular tension depends upon the establishment of a water-tight union between the graft and the cornea, which is best effected by the method described. This also enables the anterior chamber to be re-established, and lessens the likelihood of an adhesion taking place between the iris and the graft. The graft cannot move sideways or forwards because of the pressure exerted upon it by the stitches which cross its anterior surface, so that in the normal course of events, the graft is assured of the freedom from movement which is so necessary.

When the margins of the graft are kept accurately in position in this way, septic complications—which are detrimental to success—are much less likely to occur. If a portion of the graft becomes detached, there is a great liability for the detachment to increase, and leucocytic infiltration occurs in the substance of the graft. It is also liable to be invaded by leucocytes and epithelioid cells, which penetrate the surface of the graft or find their way from the conjunctival sac into the detached margin (Fig. 8). The graft and the bed in the cornea prepared for it must be accurately marked out and this is best done with the trephine. A round graft prepared in this way has no corners that might protrude and so lead to its detachment. The margins of the graft and the margins of the corneal bed prepared for it should correspond closely to each other in regard to the relative positions of the cut ends of Descemet's membrane and the corneal tissues, as seen in section at right angles to the cut surface.

In one of my cases, where the graft came away completely, the technique was faulty, and this correct adaptation did not obtain. The result was that an epithelial layer formed deep to the graft, which prevented the graft from uniting. It is quite possible that in this case a portion of Descemet's membrane was in apposition with the cut corneal surface, which prevented the nutritional channels being established (Fig. 9).

The use of olive oil seems to be an advantage, as it does not interfere with the union that has to take place, and at the same time acts as a lubricant on the delicate tissues that have to be handled, minimising the chances of unnecessary damage.

Adhesion of the iris to the graft does not necessarily lessen the chances of the graft taking, although, as I have noted in a few cases, there is a tendency to secondary glaucoma. It does, however, materially lessen the chances of obtaining a clear graft, and for this reason a small graft in the centre of the cornea is chosen in preference to a larger one, the pupil being kept well dilated to keep the iris free. Vascularisation of the graft takes place very readily when the iris is adherent, and the presence of blood-vessels in the graft invariably results in some degree of opacity. If the vascularisation is extensive, then the graft becomes more or less opaque.

In addition to this, an adherent iris tends to form new tissue behind Descemet's membrane and this tissue results in deeply seated opacity, which has a very detrimental effect on any visual result that may be obtained even though the graft itself were comparatively clear. In some of the cases, the formation of a new Descemet's membrane has been noticed behind such tissue (Figs. 10 to 12).

In order to avoid indenting and, in some cases, cutting the graft by the overlying stitches in the "cross-stitching" operation, experiments are now being carried out in which a glass disc is inserted between the stitches and the graft. This appears to be a useful modification, but at the moment it is too early for me to quote results.

Conclusion.

As a general conclusion from my experimental work, it appears that transplantation of the cornea in rabbits can be successfully carried out, although certain essential conditions must be observed if the results are to be good. It is recognised, of course, hat the experiments which I have described were arried out on normal rabbits, but if corneal transplantation is to be applied to man in order to remedy blindness, which has been regarded in the past as practically incurable, it is reasonable to assume that methods which have proved inefficient on normal eyes vould not be successful when operating on a cornea damaged as a result of previous disease or injury. would point out, however, that the cornea of a abbit is thinner than the cornea of man, so that pposition of the margins of the graft has to be ll the more accurate.

Furthermore, it is more difficult to ensure asepsis n the case of a rabbit during the period of healing, s the animal is not under the same control as a atient lying in bed. In this way, slight defects n the healing of the graft are apt to lead to more erious consequences: if, for example, the edge of he graft at one spot overlaps the adjacent cornea, it ffords an excellent opportunity for the entrance of acteria, and septic complications—which are so lamaging in their effects—are likely to result.

Of the methods of corneal grafting which I have lescribed, one appears to offer very much better hances of success than do the others, so that of the iven rabbits operated on by this method, all of the rafts united, five were transparent, one had a central ear area, and only one was opaque.

THE COMPARATIVE FREQUENCY OF LIOMATOUS AND NON-GLIOMATOUS TUMOURS WITHIN THE SKULL.

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THE object of this communication is to re-examine he incidence of tumours of the glioma group as ompared with other types of neoplasm within the kull. It will be recalled that Howard Tooth,[1] in is pioneer investigations at the National Hospital, ueen-square, in 1912, found that out of 258 intracanial tumours verified during life or after death by stological methods, 127, or 49·2 per cent., were liomata, or, omitting, as it is proposed to do throughit this paper, all metastatic tumours and purely trasellar ones (pituitary adenomata), 54·3 per cent. much larger series of histologically verified tumours as more recently been published by Cushing and his llaborators[2]—viz., 1522 histologically verified mours, of which 634, or 41·7 per cent., were omata, but if we subtract metastases and the very rge number of pituitary adenomata in this series, e percentage of gliomata is raised to 54·2, a figure actically identical with Tooth's.

Since it is impossible to take objection to the ethods by which these figures were arrived at, it is ly natural to conclude that not more than just over lf of all intracranial tumours (omitting metastases d pituitary adenomata) are gliomatous. It is, wever, open to question whether these figures curately represent the whole situation. In the st place, they seem to conflict with clinical experice, for it can hardly be denied that we should proach cases of intracranial tumour with far eater optimism if we believed that the chances of the tumour being a glioma were only very slightly greater than its being something else. Secondly, whereas the only exact method of determining the *nature* of a tumour is obviously the histological one, certain extraneous factors may tend to render this method less exact for determining the *frequency* of the various kinds of tumour in a given organ or organs. Such extraneous factors seem to operate in the case under consideration, since there are good grounds for believing that of intracranial neoplasms the glioma is the most, and the non-gliomatous tumour the least, liable to escape the attention of the histologist. During life, that is to say at operation, the glioma tends to escape because, being a tumour of the essential brain substance, it is not necessarily situated on or even near the surface. After death it is again apt to escape owing to the fact that so many of its victims die at home. Every neurologist is aware of the kind of thing that happens, at any rate in this country. A patient is admitted to hospital with the symptoms and signs of cerebral tumour; a craniotomy is performed, and as not infrequently happens, no tumour is visible, or if one is seen or felt in the substance of the brain it is deemed inadvisable to explore further. The patient, relieved of his pressure symptoms, is discharged from hospital, and after a longer or shorter period his tumour is buried with him. Moreover, the undoubted improvements in surgical and anæsthetic technique together with the more judicious selection of cases have tended materially to lower the *immediate* post-operative fatalities, and so to lessen the opportunities for post-mortem verification in hospital practice. Thirdly, one must not lose sight of the other side of the picture—namely, that given a reasonably accurate localisation, the surgeon will at least find, even if he cannot wholly remove, a very large proportion of non-gliomatous tumours, because they are nearly all surface tumours and not true *cerebral* tumours at all.

This argument would, of course, cease to be valid if it were the fact that the non-gliomatous tumour was more difficult to localise than the glioma; but the very reverse is the case. For reasons which are not completely understood, remote effects—that is to say disturbances of cerebral function not directly referable to that part of the brain occupied by the tumour—are definitely more common in gliomatous cases. The varying rates of growth of the tumour are partly responsible for this condition of affairs; the slower the rate, the greater is the capacity of the skull contents to adjust themselves to the growing tumour, with the result that although evidences of disturbed function may be slow to develop, when they do appear they are of great localising value. In the case of rapidly growing tumours, on the other hand, like many of the gliomata, signs of increased pressure may arise so rapidly that they may altogether mask the local lesion by giving rise to false localising signs of a most baffling character.

A Series Analysed.

With these considerations in mind, I have analysed all cases of intracranial tumour (excluding metastatic and purely intrasellar neoplasms) of which I have notes. Out of a total of 190 cases, 125 were "verified." Among the "verified" tumours are included four vascular tumours fully exposed at operation, concerning the nature of which no possible doubt could be entertained. and one bony tumour of the basis cranii which was demonstrated radiologically and exposed, but not removed, at operation. All the rest (120) were verified histologically.

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[1] Tooth, H.: Brain, 1912–13, xxxv., 61.

[2] Cushing, H., and Bailey, P.: Tumours Arising from the lood-vessels of the Brain, London, 1928, p. 4.

Of the 125 *verified cases* 80 (64·0 per cent.) were gliomata, and 45 (36·0 per cent.) non-gliomatous. Before discussing the 65 unverified cases it will be useful to consider the methods by which verification was obtained in the gliomatous and non-gliomatous groups respectively.

In the 80 cases of verified gliomata craniotomy was performed in 33 patients with the following results:—

Gliomatous Group (80 Cases).

Total craniotomies.	Seen and verified.	Seen, not verified.	Not seen.
33	17 (51·0 %).	8 (24·5 %).	8 (24·5 %).

In the 45 cases of verified non-gliomatous tumours cranitomy was performed on 39 patients with the following results:—

Non-gliomatous Group (45 Cases).

Total craniotomies.	Seen and verified.	Seen, not verified.	Not seen.
39	34 (87·2 %).	1 (2·6 %).	4 (10·2 %).

In this series of craniotomies, therefore, the chances of verifying a glioma were approximately as 1 is to 1, compared with 6½ to 1 in favour in the non-gliomatous group. Moreover, of the five non-gliomatous tumours not verified at operation, one was an olfactory endothelioma which owing to its large size was regarded as inoperable, while two were auditory nerve tumours, in which the operation had to be terminated owing to the collapsed state of the patients.

These figures indicate that whereas relatively few non-gliomatous tumours escape verification during life, the reverse is the case with the gliomata. Further, improved technique in diagnosis, particularly the assistance afforded by X rays in the case of the endothelioma, is tending to improve the craniotomy rate of verification in non-gliomatous cases. Thus in this series, out of a total of 45 verified non-gliomatous tumours, verification was obtained by craniotomy in 34 cases, or 75·5 per cent., whereas in 80 verified gliomas craniotomy as a means of verification was successful in only 17 cases, or 21·2 per cent. In other words, three-quarters of non-gliomatous neoplasms were verified during life, as compared with one-fifth of gliomatous tumours; in the latter group we are therefore far more dependent on post-mortem examination for verification, as the following Table shows:—

—	Total cases.	Verified at operation.	Verified post mortem.	Operation without verification	Verified post mortem; no operations.
Gliomatous	80	17 (21·2 %)	63 (78·7 %)	16 (20·0 %)	47 (57·5 %)
Non-gliomatous	45	34 (75·5 %)	11 (24·4 %)	5 (11·1 %)	6 (13·3 %)

The large proportion of gliomata verified post mortem as opposed to antemortem calls for some explanation, for there is reason for supposing that under other circumstances the proportion would be smaller. It might, in fact, be argued that far too large a proportion of these patients were denied their only chance of survival—namely, surgical interference. The reasons are as follows: (1) A large majority of these patients were admitted to St. Thomas's Hospital; now at a general hospital quite a number (11 in this series) of cases are admitted as medical emergencies, comatose or semi-comatose, the result of a hæmorrhage into the tumour, or as happened in two cases, from the surface of the tumour. These cases are usually regarded as primarily vascular in origin until autopsy discloses the true state of affairs. In every case the tumour was a glioma. (2) The rather large percentage of gliomata seen but not verified at operation is due partly to the judgment and practice of the particular surgeon, and partly to the fact that the series includes several cases occurring at a period when exploration of the brain substance was less freely practised than it is to-day. (3) The relative infrequency of craniotomy—i.e., 33 craniotomies out of 80 verified glioma cases (41·2 per cent.), and in the whole series, 107 out of 190 (56·3 per cent.)—is attributable partly to (1), but to a much greater extent to my growing belief that many cases are best left alone; this applies especially to invasive tumours involving the white matter of the hemispheres in persons who are advancing in years. It may be urged that the withholding of surgical intervention must inevitably lead to the overlooking of many removable tumours. This is a risk which I am more and more prepared to take but that the risk is a small one is indicated by the fact that in the present series no surface tumour was found unexpectedly except in two cases; in one (occipital endothelioma) the patient was admitted in semi-coma and remained uncoöperative until death three weeks later, while in the other a gross error of localisation on my part led to a faulty surgical approach. It should also be mentioned that of the six non-gliomatous cases in which an operation was performed a correct clinical diagnosis had been arrived at in four, and in only one (bilateral auditory nerve tumour) could there have been any possibility of successful surgical intervention.

Passing on to the consideration of the 65 *unverified cases*, three were clinically suprapituitary cysts, two were lateral recess tumours in which operation was refused, while in three (two craniotomies) no opinion could be expressed as to the nature of the tumour. Of the remaining 57 cases craniotomy was performed in 36; in 24 of these a tumour with the naked-eye appearances of a glioma was seen reaching the surface of the brain, but not verified, while in 12 cases exploration was wholly negative. Of these 12 cases, all of them tumours of the hemispheres or corpus callosum, five have been lost sight of and seven are dead, the longest survival period being three and a half years.

In the remaining 21 cases no operation was performed; of these two were pontine tumours in children (both dead), four were midline cerel tumours in children (all dead), while 15 were tum of the cerebral hemispheres in adults, of whom [illegible] are dead and six cannot be traced.

With respect to these 21 cases (no operation) and the 12 cases in which craniotomy gave a negati result, the clinical evidence was in my opini sufficiently strong to justify their being regarded as gliomatous. Without going into details as to the differential diagnosis of intracranial tumours, the evidence in favour of a given tumour being a glioma is based on the following considerations: the situation of the tumour; the age of the patient; a relatively short survival period, where known; negative X ray findings; evidence of progressive infiltration of the brain substance as shown by the spread and increase of paralytic phenomena; and sudden increases of paralytic phenomena owing to hæmorrhage into the tumour.

If we include among the gliomata the 24 cases in which a glioma-like tumour was seen but not verified, and the 33 cases in which the tumour was assumed to be a glioma on clinical grounds alone, we have a total of 137 gliomata out of 190 cases, or 72·1 per cent. It is manifestly very easy to criticise the methods by which this figure has been arrived at; nevertheless I believe it to be a truer representation of the facts than the lower figures obtained by the microscope alone.

Conclusions.

(1) It is suggested that the figures arrived at by the only exact method—viz., histological examination—materially underestimate the relative frequency of the glioma group. This figure is of great importance clinically because on it very largely depends the general prognosis in cases of intracranial tumour. (2) In a series of 190 cases of intracranial tumour evidence is brought forward to show that the chances of "verifying" a glioma at operation are considerably less than those of verifying a non-gliomatous growth. (3) Whereas verification was dependent on post-mortem examination (with or without previous surgical intervention) in 78·7 per cent. of 80 gliomatous tumours, craniotomy was successful in verifying 75·5 per cent. of 45 non-gliomatous tumours. (4) Of patients dying of intracranial tumour *unverified during life* in a very large majority the tumour is a glioma. Many cases escape post-mortem examination, and accordingly many gliomata remain unverified. (5) It is suggested that, excluding metastases and pituitary adenomata, the glioma is not merely as common as, but is actually two to three times commoner than, all other intracranial neoplasms put together.

SYMPTOMLESS ACUTE MASTOIDITIS:

A RECORD OF FOUR CASES.

By N. Asherson, F.R.C.S. Eng.,

ASSISTANT SURGEON, THE CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL.

Not all cases of acute suppurative mastoiditis are associated with symptoms. It is possible for such a dangerous condition to be present, even with an intracranial extension such as a perisinus abscess, and yet for the lesion to be entirely latent as regards symptomatology, though recognisable by the otologist familiar with the protean manifestations of acute mastoiditis. The record below illustrates typical cases of acute mastoiditis with no symptoms.

It is a recognised clinical observation that one of the most reliable signs of acute mastoiditis, if present, is a sagging or bulging of the posterior superior wall of the osseous meatus where it abuts on the tympanic membrane. This sagging may be slight or so marked as to obscure a view of the drum. What is not so widely accepted is the important fact that this bulging or sagging may be the only sign or symptom indicating the presence of a suppurative mastoiditis, or even an intracranial collection of pus. If this sign is overlooked the condition remains latent until some further complication occurs, such as meningitis or lateral sinus thrombosis, at which stage the patient's life is definitely endangered. Its recognition enables the operator to come to grips with the infection in its early stage. Its detection depends on routine otoscopic examination in all acute ear conditions, after the meatus has been thoroughly cleansed of all discharge by syringing and mopping. Every acute ear condition should be submitted to repeated otoscopic examination, and for this purpose I would draw attention to the clear views of the tympanic membrane and the deep reaches of the meatus obtained with the electric otoscope. No one who has to deal with ear conditions should fail to avail himself of the use of this instrument. It must be used to be appreciated.[1] The possession of an electric otoscope will overcome any reluctance on the part of the practitioner to inspect the tympanic membrane in all acute ear conditions, and in fact will enable him to do so under all circumstances, rendering him independent of external lighting conditions. It is the only instrument that makes it possible adequately to examine the ear of an infant or refractory child.

The usual history of this type of case is as follows. The patient, who may be a child or an adult, has had an attack of acute otitis media, with or without an actual ear discharge. The acute ear condition has apparently subsided, except for occasional attacks of pain, a factor that leads to further advice being sought. It will be recollected that the pain of an acute otitis media should subside soon, and that any pain persisting after the first few days should call for a searching examination as to the cause as, if there is free drainage, it is strongly suggestive of an extension of the suppuration outside the confines of the antrum and tympanic cavity. The case, as a rule, reaches the otologist about the third week after the first onset of the attack. In the interval there has been little pain, no temperature, no mastoid swelling or œdema, and no tenderness over the mastoid. (If the case is neglected and is seen late, some œdema may be present behind the ear; the œdema is free from tenderness and is situated in the premastoid space.[2]) There is no impairment of hearing, and there may be little or no otorrhœa. Sometimes the discharge may be profuse, as in Case 3. Only on otoscopic examination is any abnormal sign found—viz., a bulging or sagging of the posterior or superior wall of the osseous meatus, in juxtaposition with the membrane. The tumefaction may be slight, or so marked as to prevent any view of the tympanic membrane. Even if the case is kept under observation for a time, the picture will remain unchanged as regards symptoms or signs, as Case 2 shows. But whenever such a case is encountered it should be operated upon forthwith, by the mastoid approach. No surgeon will regret the step, and he will be surprised at the extent of the suppuration revealed at operation, in view of the absence of signs and symptoms.

The cases of meningitis and sinus thrombosis developing some short period after an attack of acute otitis media are, in many instances, due to neglect of this physical sign which is not seen unless sought; observers only see what they are searching for. The case thus presents its symptoms only when the meningitis is in full swing, when treatment is too late to be of any avail.

Acute otitis media due to the *Streptococcus mucosus* has a sinister reputation for being followed by intracranial complications, the whole sequence being

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[1] In choosing an electric otoscope, the following criteria must be satisfied. It must be light in weight; must work with an ordinary pocket torch battery; the specula must not be cumbersome, but light; the lens must be focused at least 1 cm. beyond the point of the speculum; a bulb for converting it into a Siegle speculum must be available; a small speculum for use in examining infants must be available. The otoscope supplied by the Medical Supply Association fulfils these criteria. Many of the electric otoscopes supplied by other manufacturers fail in many of the essential points, especially in having the lens focused incorrectly.

[2] Asherson, N.: The Premastoid Space: its Relation to Mastoiditis, Journal of Laryngology, February, 1931.

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Non-gliomatous	45	34 (75·5 %)	11 (24·4 %)	5 (11·1 %)	6 (13·3 %)

The large proportion of gliomata verified post mortem as opposed to antemortem calls for some explanation, for there is reason for supposing that under other circumstances the proportion would be smaller. It might, in fact, be argued that far too large a proportion of these patients were denied their only chance of survival—namely, surgical interference. The reasons are as follows: (1) A large majority of these patients were admitted to St. Thomas's Hospital; now at a general hospital quite a number (11 in this series) of cases are admitted as medical emergencies, comatose or semi-comatose, the result of a hæmorrhage into the tumour, or as happened in two cases, from the surface of the tumour. These cases are usually regarded as primarily vascular in origin until autopsy discloses the true state of affairs. In every case the tumour was a glioma. (2) The rather large percentage of gliomata seen but not verified at operation is due partly to the judgment and practice of the particular surgeon, and partly to the fact that the series includes several cases occurring at a period when exploration of the brain substance was less freely practised than it is to-day. (3) The relative infrequency of craniotomy—i.e., 33 craniotomies out of 80 verified glioma cases (41·2 per cent.), and in the whole series, 107 out of 190 (56·3 per cent.)—is attributable partly to this, but to a much greater extent to my growing belief that many cases are best left alone; this applies especially to invasive tumours involving the white matter of the hemispheres in persons who are advancing in years. It may be urged that the withholding of surgical intervention must inevitably lead to the overlooking of many removable tumours. This is a risk which I am more and more prepared to take, but that the risk is a small one is indicated by the fact that in the present series no surface tumour was found unexpectedly except in two cases; in one (occipital endothelioma) the patient was admitted in semi-coma and remained uncoöperative until death three weeks later, while in the other a gross error of localisation on my part led to a faulty surgical approach. It should also be mentioned that of the six non-gliomatous cases in which no operation was performed a correct clinical diagnosis had been arrived at in four, and in only one (bilateral auditory nerve tumour) could there have been any possibility of successful surgical intervention.

Passing on to the consideration of the 65 *unverified cases*, three were clinically suprapituitary cysts, two were lateral recess tumours in which operation was refused, while in three (two craniotomies) no opinion could be expressed as to the nature of the tumour. Of the remaining 57 cases craniotomy was performed in 36; in 24 of these a tumour with the naked-eye appearances of a glioma was seen reaching the surface of the brain, but not verified, while in 12 cases exploration was wholly negative. Of these 12 cases, all of them tumours of the hemispheres or corpus callosum, five have been lost sight of and seven are dead, the longest survival period being three and a half years.

In the remaining 21 cases no operation was performed; of these two were pontine tumours in children (both dead), four were midline cerel tumours in children (all dead), while 15 were tum of the cerebral hemispheres in adults, of whom are dead and six cannot be traced.

With respect to these 21 cases (no operation) the 12 cases in which craniotomy gave a negati result, the clinical evidence was in my opini sufficiently strong to justify their being regarded as gliomatous. Without going into details as to the differential diagnosis of intracranial tumours, the evidence in favour of a given tumour being a glioma is based on the following considerations: the situation of the tumour; the age of the patient; a relatively short survival period, where known; negative X ray findings; evidence of progressive infiltration of the brain substance as shown by the spread and increase of paralytic phenomena; and sudden increases of paralytic phenomena owing to hæmorrhage into the tumour.

of an infected sinus, or the symptoms of a meningitis supervened. (3) Routine otoscopic examination is important in all ear conditions. No case of acute otitis media can be discharged from observation without an otoscopic examination. (4) Suppuration in the mastoid and intracranial extensions may be present without symptoms. (5) Rapid accumulation of pus in the meatus is a significant sign for operation. (6) In a case of otorrhœa any history suggestive of an intracranial extension of the suppuration must be taken seriously, notwithstanding its absence when under observation.

SURGICAL CATGUT.

By Arthur E. Porritt, M.B. Oxf., F.R.C.S. Eng.,
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The greatest advantage derived from the use of catgut as a suture material is its disappearance from the body when its function of the coaptation of cut surfaces has been taken over by the formation of living fibrous tissue. This by itself does not make it preferable to silk or thread, but if this property of dissolution be combined with certain sterility, good tensile strength, and an absence of irritating effects upon the tissues in which it is embedded, then it becomes the material of choice for the ligature of vessels and the suture of severed tissues. The catgut prepared according to the method described here possesses these qualities in a very high degree. It has been used by Prof. C. A. Pannett for nine years, giving every satisfaction, and for a shorter time by other surgeons at St. Mary's Hospital.

Method of Sterilisation.

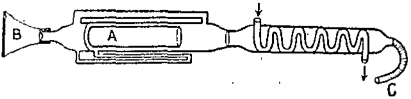
Dry, twisted commercial catgut was used. There is no advantage from the point of view of sterility of the final product in attempts to carry out the manufacturing process under sterile conditions, or in sterilising the ribbons before they are twisted. The experiments detailed here show that heavily spore-infected catgut is certainly rendered free from organisms by the method described. The researches of L. H. Lampitt and J. H. Bushill have laid down the conditions which must prevail during the manufacture of catgut in order to preserve its maximum strength. These requirements of correct hydrogen-ion concentration, width of ribbon, and number of turns per inch appear to be fulfilled by certain of the makers of commercial catgut. The sterilising agent used is peppermint oil. Its use was first suggested by Captain S. R. Douglas, F.R.S., of the Medical Research Council. His method has been altered in detail, but not in principle, so that the required degree of resistance to absorption has been obtained. This vegetable oil is distilled from the herb *Mentha piperita*, and has the following characteristics: Specific gravity, 0·9; refractive index, 1·46; menthol content, 0 per cent.; optical rotation, −20° to −35°; solubility, in 4 in 70 per cent. alcohol.

Two small experiments were carried out with the oil alone. It was tested in various dilutions of from 1 : 10 to 1 : 1000 against a culture of pure staphylococci, the result showing that the oil was bactericidal up to a dilution of 1 in 200. Its power of diffusion, tested on an agar plate against various other well-known and commonly used antiseptics, showed it to be in this respect the equivalent of mercury perchloride.

The exact technique of the preparation by this method is as follows:—

1. The raw gut is soaked for six hours in a bichromate solution of sodium bichromate, grs. 45; phenol, drachms 5; glycerin, drachms, 5; aqua distillata, ad oz. 30.
2. The gut is taken out and hung and dried overnight. It is then cut and banked.
3. The hanks are placed in a hermetically closed container filled with peppermint oil in spirit (1 in 10), which is immersed for two hours in a water-bath kept at a temperature of 60° C.
4. It is left for 24 hours and again heated for a further two hours at 60° C., the container being untouched throughout.
5. The gut is removed and preserved in 1 : 20 carbolic in spirit.

The efficacy of the process was tested as follows. Eighteen hanks of raw catgut (each 12 to 15 in. long) were taken and treated in the following manner: six were placed in broth cultures of *B. subtilis*, six in similar (anaerobic) cultures of *B. sporogenes*, and six in similar (anaerobic) cultures containing avirulent *B. tetanus*, *B. sporogenes*, and a few *B. welchii*. The *B. subtilis* cultures were incubated for 48 hours (until a plentiful growth was evident) and the remaining two series for two weeks. At the end of these periods the gut was sterilised, strictly according to the above method, after which it was subjected to a process of distillation with ether (to remove the peppermint oil) and water (to remove the chromic acid). The process was carried out under entirely aseptic conditions by the use of a sterilised Soxhlet apparatus arranged as in the Figure.



The gut was removed from the container by sterile forceps and placed in the previously sterilised paper envelope "A" in the Soxhlet. Ether was placed in flask "B" and boiled until some six to eight distillations had taken place. The glass tube "C" (until this stage plugged with sterile wool) was then attached to a rubber tube leading from a flask of boiling water and six distillations with water were carried out.

At the conclusion of this process the gut was removed (again with sterile forceps) and each hank of each series replaced in new broth tubes (rendered anaerobic of course where necessary). The result of incubating these cultures at 35° C. was as follows:—

1. *B. subtilis* cultures (48 hours), one hank dropped on bench during transference and therefore discarded; five remaining tubes, no growth.
2. *B. sporogenes* cultures (2 weeks), six tubes, no growth.
3. Mixed cultures (2 weeks), with *B. tetani*, *B. sporogenes*, and *B. welchii*, six tubes, no growth.

To prove that the success of the process of sterilisation was in no way due to the distillation method (i.e., that the ether had itself no disinfectant effect) another series of six hanks of gut were similarly treated except that they were not sterilised by peppermint oil—i.e., they were infected (with a mixed culture of anaerobes), distilled and recultured. The result was a heavy growth in all six tubes, which on microscopic examination showed all the bacteriological strains of the original culture.

As a further proof of the efficacy of the oil as a sterilising agent, two of the *B. sporogenes* and two of the mixed (*B. tetani*) culture tubes which had shown no growth after three weeks' incubation were treated as follows. The broth was removed by sterile pipette and replaced by 5 per cent. acetic acid, in an attempt to disintegrate the catgut and prove by further culturing that no spores had been retained in its meshes. As after a fortnight the acetic acid appeared to have had little effect, this fluid was withdrawn and a peptone-hydrochloric acid solution (equivalent to that of gastric juice) was substituted. In a further fortnight the gut, though not completely dissolved, was softened practically to a state of disintegration. The fluid was centrifuged and a few drops from the bottom of the centrifuge tube reincubated for two weeks in an anaerobic broth culture; again in neither case (i.e., *B. sporogenes* or *B. tetani*) did growth result.

Reaction of the Tissues.

However strong a catgut might be, however dependable its sterility or its property of disappearing from the body, it would not be desirable if it set up an excessive irritation in the tissues in the process of dissolution. Adherents of silk have recommended the material of their choice not only because of the ease and certainty of its sterilisation, but also because they have maintained that it is inert in the tissues and sets up less reaction than catgut, which must be digested and removed by cell activity. Experiments have proved, at least in the case of catgut prepared by the peppermint oil method, that this is a delusion. Silk sets up far more reaction in the tissues, which attempt in vain to remove it, the failure of their efforts leaving behind a mass of fibrous tissue. Catgut sets up tissue activity which proceeds to its normal conclusion, and the amount of scar tissue remaining is a minimum.

The following experiments were carried out to demonstrate the effect of these two materials on the tissues.

Two rabbits were operated upon* on the same day, all aseptic precautions being scrupulously observed. The anæsthetic used was ether. The skin of the anterior abdominal wall, previously depilated and prepared, was incised in the median vertical plane and dissected back. On either side of the mid-line a vertical through-and-through stitch was inserted into the abdominal wall. It penetrated the peritoneal cavity and emerged on the surface of the muscle of the abdominal wall. Catgut was used on one side and silk of the same thickness on the other. The median laparotomy wound was then sewn up. The silk was sterilised by simple boiling.

After ten days one rabbit was killed and the area of the anterior abdominal wall containing the sutures was removed en bloc. This tissue was divided transversely into three pieces, each of which thus contained a silk suture at one end and a gut at the other. These pieces were fixed and sectioned, the sections being cut, two at right angles and one parallel with the surface. Each piece was cut in series, sections being 8 μ apart, and each section stained alternatively with hæmatoxylin and eosin, and van Gieson's stain.

On macroscopic inspection of complete piece of abdominal wall after removal: 1. No adhesions were found in the peritoneal surface to either line of sutures. 2. The peritoneum had already grown completely over all sutures which had penetrated it. 3. The reaction to the silk was obviously much greater. 4. Catgut sutures were visibly breaking up.

The result of microscopic examination of sections was as follows:—

Gut.—The strand was partly broken up and lying in a space in the tissues. Closely surrounding and invading the gut were many polymorphs (mainly showing trilobed nuclei). Outside the clear tissue space in which the suture was lying were many more mobilising leucocytes, and the van Gieson stain showed a definite though not marked fibrous reaction.

Silk.—The threads were still intact and leucocytes were evident in numbers adhering to these. The surrounding polymorph immigration was much denser than in the case of the gut, and the van Gieson stain showed a marked fibrous reaction with a diameter at least twice as big as that of the gut.

The second rabbit was killed on the twenty-first day after the operation and a similar procedure carried out. Macroscopic inspection showed: 1. No peritoneal adhesions. 2. Catgut stitches not visible from peritoneal surface. 3. Silk stitches still visible and on palpation giving the feel of a hard fibrous nodule.

The result of microscopic examination was as follows:—

Gut.—Strands were still visible, but showing no continuity. The surrounding reaction, though slightly larger than in the "ten day case," was definitely much more cellular than fibrous.

Silk.—The threads were still intact and the surrounding tissue reaction, which contained several obvious giant cells, was more than twice as great as that of the gut, and extended through practically the whole thickness of the abdominal wall. In consistency it was decidedly fibrotic, few individual cellular elements being discernible.

The whole series of experiments was then repeated, the results confirming in detail those of the previous set.

From this it appears that, if the object of surgery is to reconstitute the tissues after operation in as nearly as possible their original natural condition, the catgut is a more suitable material than silk. After three weeks the catgut suture material had i disappeared, whilst the consequent tissue reaction was relatively slight, showing indications of ultimate conforming even more completely to the original pre-operative cellular condition of the tissues. The silk suture, on the other hand, had in the same period shown no signs of disintegration and had produced a most definite and extensive "foreign-body fibrous reaction in the surrounding tissues.

Tensile Strength of the Catgut.

No method of sterilising catgut can be recommended if it interferes seriously with the strength of the material. Experiments were therefore undertaken to determine what change, if any, took place as a result of the above method of preparation and to measure the deterioration in tensile resistance. The apparatus used in these determinations was that recommended by L. H. Lampitt and J. H. Bushill made by Messrs. Goodbrand and Co., Ltd., of Staly bridge, and used in the testing of cotton yarns. Lengths of gut of 24 in. were stretched on the instrument and the breaking strain and elongation at this point were noted. The results are shown in Table I.; they are average figures for 15 to experiments.

TABLE I.

	Raw.					*Prepared.*			
Size.	Approximate diameter in inches.	Original diameter in 800th of an inch.	Stretch (ins.).	Strain (lbs.).	Stretched diameter in 800th of an inch.	Original diameter in 800th of an inch.	Stretch (ins.).	Strain (lbs.).	Stretched diameter in
00	1/100	7	3½	2	7	8	4	3	8
0	3/200	12	5½	4½	10	12	6	4	11
1	1/50	14	4	7½	13	16	6	7½	15
2	1/40	19	4	12	18	20	6	11½	19
3	1/35	21	4	17	20	22	6	14	20

From this it will be seen that the prepared catgut (1) has a slightly greater diameter than the catgut in its raw state; (2) will stretch more; and (3) will bear slightly less strain. On average the force required to break a piece of gut the sizes tested diminishes the diameter by 1/

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* By Prof. C. A. Pannett.

f an inch. The "strain" (tensile strength) which a articular piece of gut is capable of taking may be id approximately to vary directly as the diameter the gut.

PRE-OPERATIVE TESTS.

If each length of catgut were stretched to breaking oint before sterilisation, the remaining strands ould obviously be more dependable in use and the perator would know what tension exactly his aterial could withstand. When, however, catgut stretched the constituent ribbon is pulled into a ghter and closer spiral. The question therefore ises whether this increase in tightness of the twist terferes with the penetration of the antiseptic uid. Experiments were carried out to test this. engths of catgut (24 ins.) were taken and infected ith (1) *B. subtilis* and (2) *B. sporogenes*. They were en subjected to about one-half the average breaking rain, sterilised in the usual way, and tested for erility as above described. In both cases the whole ries of six tubes was devoid of any sign of growth. The gut was then restretched to breaking point and futher series of measurements taken as shown in able II.

The results show that the method of sterilisation ed is sufficiently potent to allow the oil to penetrate to the individual strands of the gut, even after retching; and further that the tensile strength the various diameters of gut is to all intents and rposes unaffected by the sterilisation process.

GENERAL CONCLUSIONS.

1. A method of sterilisation of catgut has been escribed which passes the most stringent bacteriological tests for its efficacy in killing off aerobic and anaerobic bacteria and their spores.

2. The tensile strength of the catgut is scarcely diminished by the process.

3. The catgut can be subjected to a preliminary tension without interfering with its sterilisation, thus ensuring a ligature of known breaking strain.

4. Catgut sterilised in this way is absorbed by the tissues of a rabbit with much less tissue reaction and formation of fibrous tissue than is produced by silk of the same diameter sterilised solely by boiling.

TABLE II.

B. subtilis *Infection (Lengths of 24 ins. of Chromicised Gut).*

Diameter (ins.).	Stretch applied (ins.)	Strain applied (lbs.).	Original diameter in 800th of an inch.	Infect and Stretched Diameter in 800th of an inch.	Diameter after culture in 800th of an inch.	Restretch in ins.	Restrain in lbs.	Final diameter in 800th of an inch.	Total Stretch (ins.).	Total strain (lbs.).
1, 2 } 0	2½	1½	12	11	11	4½	2½	10	7	3⅚
3, 4 } 1	2½	3½	16	15	16	3½	3½	15	6	6⅚
5, 6 } 2	3½	4	20	19	19	4	7	18	7½	11
				B. sporogenes *Infection.*						
1, 2 } 0	2½	1½	12	11	11	3	2⅞	10	5½	4⅜
3, 4 } 1	3½	3	16	15	16	2½	3¼	14	6¼	6¼
5, 6 } 2	2½	5	20	20	19	2¼	6¼	19	5¼	11¼

CLINICAL AND LABORATORY NOTES

A CASE OF ALEUKÆMIC LEUKÆMIA.

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AND
P. Lazarus-Barlow, M.B. Camb.,
PATHOLOGIST TO THE HOSPITAL.

A farmer, aged 65, was admitted to the Royal ast Sussex Hospital in January, 1930. For nine eeks he had been complaining of severe abdominal ain on the left side.

On admission he was looking extremely ill and was suffering om abdominal pain, vomiting, intractable hiccough, and boured breathing. His temperature was 104° F., his pulse-ate 132, and his respiration-rate 28. His skin was of a mon tint and his thyroid gland was enlarged to the right. here were no definite abnormal signs in the heart or lungs. he abdomen was enlarged, with a regular contour. The pleen was palpable four fingers' breadth below the costal argin, having a definite notch. The liver was palpable st below the ribs. The kidneys were not palpable. The rine contained some albumin, with pus and epithelial nd granular casts. The reflexes were not abnormal. he teeth were few in number but carious. There were o hæmorrhages.

The *blood count* showed: hæmoglobin, 60 per cent; ed blood corpuscles, 2,200,000 per c.mm.; leucocytes, 600 per c.mm.; colour-index, 1·4. The differential count howed: polymorphonuclear cells, 0; eosinophils, 0; arge mononuclears, 6; large lymphocytes, 71; small ymphocytes, 23. Twenty-two nucleated red cells were een per 100 leucocytes.

The *clinical course* was rapid deterioration. The patient ecame deeply jaundiced, with high fever, dyspnœa, and oma; and death occurred four days after admission. No hæmorrhages occurred.

Post-mortem examination was carried out two and a half ours after death. The body was that of a well-developed, well-nourished man. There was marked jaundice. Rigor mortis had not set in. The heart was flabby and the muscle soft. The endocardium was deeply bile-stained. The valves were competent and the coronary arteries patent.

The cervical and paratracheal glands were enlarged and pinkish. The right lobe of the thyroid gland was considerably enlarged and was pressing on the trachea, causing some narrowing. On section the colour was dark red, with yellow areas. The weight of the gland was 4½ oz. Histologically, little thyroid tissue was seen. The greater part of the section was taken up by large areas of hæmorrhage in which the acini were small and compressed. In these areas were masses of degenerated cocci and numbers of large lymphocytes.

The lungs showed some congestion of their bases but were otherwise healthy. The stomach and intestines were healthy. The liver showed some perihepatitis. On section the liver substance was soft and fatty. The spleen weighed 74 oz. and extended to a full hand's breadth below the costal margin. On section it was dark red in colour and very congested. Stained films from the pulp showed enormous numbers of large lymphocytes. The pancreas appeared healthy. There was a large mass of glands on either side of the vertebral column immediately beneath the pancreas and these were forcing the head of the pancreas upwards, thereby causing obstruction to the ampulla of vater. The common bile-duct was patent. The kidneys and suprarenals seemed healthy. There was some decrease in the reticulum of the abdominal glands and areas of hæmorrhage and infiltration with mononuclear cells were seen, as in the spleen.

The blood picture, taken in conjunction with the post-mortem findings, suggests aleukæmic lymphatic leukæmia. The other unusual features are: (1) the blood picture presenting 100 per cent. mononuclears; (2) the condition of the thyroid gland, which appeared to be that of an abscess which had ruptured into a vessel; (3) the great mass of glands on either side of the vertebral column in the abdomen beneath the head of the pancreas, pressing it upwards and so obstructing the ampulla of Vater.

FATAL HÆMORRHAGE
IN RADICAL OPERATION FOR TRIGEMINAL NEURALGIA
FOLLOWING INJECTION TREATMENT.

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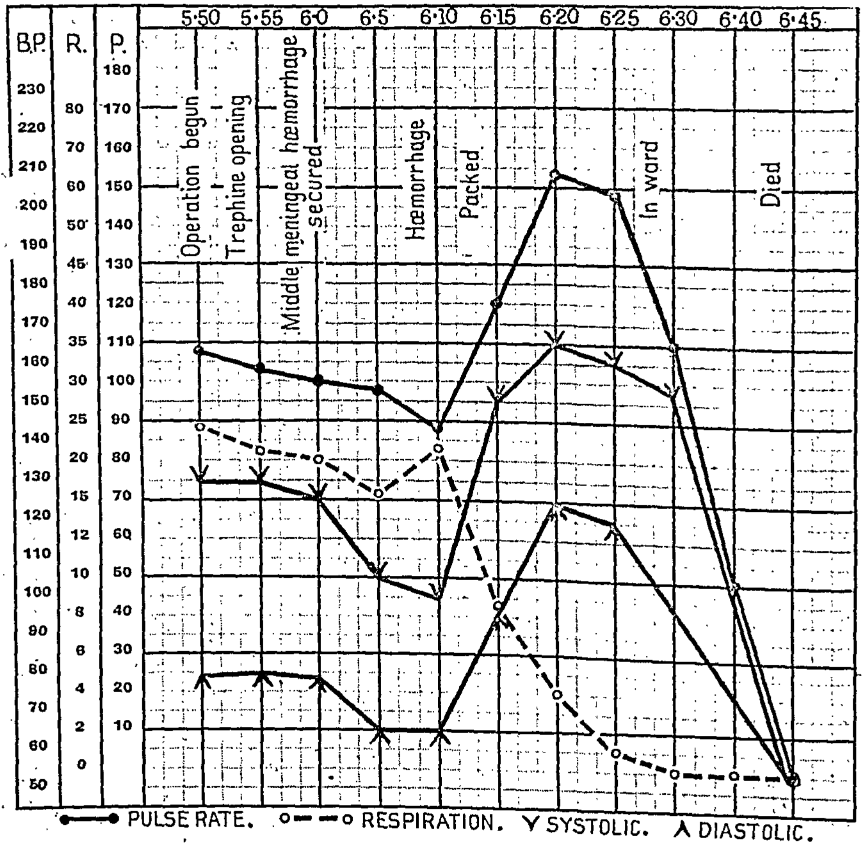
This case illustrates the difficulties and dangers which may be experienced in performing the operation for division of the sensory root of the Gasserian ganglion in trigeminal neuralgia after repeated attempts to cure by alcohol injection.

The patient, a male aged 61 years, gave a history of neuralgic pains for some 20 years. Within the last three years these had become much more severe. During attendance at a hospital for one year previous to operation he had had three alcohol injections into the affected nerves, the longest period of relief following this form of therapy being three weeks. For some weeks before admission for operation patient had been unable to sleep because of severe pain, and was "sitting up" at nights. He was in rather an exhausted condition and was not a good operative risk.

All three divisions of the trigeminal nerve were involved. Spasms of pain began at the right angle of the mouth and spread thence up the right cheek, right side of nose, round the eye, and then over the temporal region upwards to the vertex. Downwards, the spread was round the right side of the jaw. Attacks of pain were readily brought on by slight stimuli, especially by attempts to open the mouth, the patient being in consequence afraid to eat. The right side of the face was slightly flushed, and hyperæsthesia was evident over the distribution of all three divisions of the nerve. The right side of the tongue was dry and furred and there was slight epiphora of the right eye. A radiogram of the skull was normal. The cerebro-spinal fluid showed one cell per c.cm., a total protein content of 0·03 per cent., and no excess of globulin. The Lange test gave: 0111000000, and the Wassermann was negative in blood and cerebro-spinal fluid.

At operation the subtemporal route, as described by Frazier, was followed. Separation of the dura from the base of the skull was proceeding with some difficulty, owing to adhesions, when the middle meningeal artery ruptured. Hæmorrhage was severe, rendering subsequent progress difficult. Adhesion of the dura to the skull-base was now found to be extraordinarily firm, and separation of it, in process of elevating the brain, became increasingly difficult. During the final stages of approach to the ganglion a sudden severe hæmorrhage took place, and as this could only be controlled by firm and extensive packing, the operation had to be abandoned and the patient was returned to the ward. Respiration had ceased meantime, but the pulse was good in quality, though rather rapid; artificial respiration was instituted but without avail, and the patient died some 20 minutes after leaving the theatre.

In accordance with our routine practice in all operations for brain conditions at the West End Hospital, a record of blood pressure, pulse-rate, and respiration-rate was kept throughout the operation. The chart here given presents some points of interest. After the severe hæmorrhage occurred the respiration-rate fell rapidly and eventually to zero, where it remained, but the blood pressure—systolic and diastolic—and pulse-rate continued to rise until shortly before death, when these also fell rapidly to zero. The blood pressure and pulse-rate appear to have started to rise before the onset of hæmorrhage, according to the chart, but it must be remembered, in view of the post-mortem findings, that blood was extensively diffused throughout the base of the brain and around the pons before the hæmorrhage appeared in the wound, and that packing was then introduced which raised the intracranial pressure still further.



Anæsthesia chart of operation under open and intratracheal ether (6 ounces). B.P. = blood pressure; R. = respiration; P. = pulse-rate.

POST-MORTEM FINDINGS.

Within 24 hours of death a post-mortem examination was carried out by Dr. W. E. Carnegie-Dickson, who reported as follows: "Large anteroposterior tear, 1¼ in. long, in centre of floor of the middle fossa. Small tear, or wound, in the internal carotid artery just before it subdivides—little bit of clot lying in opening, partly in and partly outside. Very extensive subdural hæmorrhage all over base, &c., and round pons and medulla. Tip of temporal lobe broken up (by this hæmorrhage?). Cavernous sinus intact. Gasserian ganglion surrounded and very firmly bound down by fibrous adhesions (this probably accounting for dura giving way when levered up)."

DISCUSSION.

It is evident that several factors contributed to the fatal result. Of these the most important was the density and firmness of adhesions in the operation region. In our opinion these adhesions were brought about by the previous injections of alcohol in the neighbourhood of the ganglion itself. Kulankampff[1] refers to the inevitable formation of adhesions following such injections. That such effects, due to the irritation of the alcohol, may be quite extensive may be deduced from the interesting experiments performed by Wilfred Harris.[2] He showed that injection of the foramen ovale in the cadaver with one cubic centimetre of methylene-blue solution almost invariably stained the whole of the ganglion deep blue, and not the ganglion only, but also sometimes the wall of the cavernous sinus, the anterior surface of the pons, and even to a lesser extent the opposite cavernous sinus. Such wide spreading of the alcohol, he maintains, explains how cranial nerve paralysis may occur when the injection is done too rapidly. In this connexion it is of interest to refer to a case published both in America and in this country of a girl, aged 20, in whom paralysis of the sixth, seventh, and eighth nerves followed injection and remained permanently. Unfortunately, also, the neuralgia returned after six weeks and a Gasserian operation was performed, the sensory root of the fifth nerve being avulsed, finally curing the neuralgia. Stookey[3] even goes so far as to say "the latter procedure (i.e., injection) should be used only when diagnosis is *doubtful, since the patient will come to* the operation eventually." This, of course, is not the view held by other authorities, notably Wilfred Harris in this country. The difficulties confronting the operator when firm dural adhesions are present is also recognised by Frazier,[4] who says, "occasionally the dura is so adherent that laceration is unavoidable." Harris[5] also draws attention to the fact that alcohol, when *injected into the tissues,* causes later the development of a fibrositis, and subsequent injections may be hindered by the toughness of the tissues impeding the facility of needle-manipulation when searching for the nerve. Surely this observation applies with even greater emphasis to the difficulties which may ensue when radical operation itself is tackled after injection treatment has failed. It is also, of course, common knowledge that impairment of the function of the pterygoid muscles sometimes results from a fibromyositis in these muscles caused by leakage of alcohol into their substance in the process of alcohol injection.

In the case dealt with here another factor of importance was the arteriosclerotic condition of the vessels. The middle meningeal, for example, was moderately degenerated, and very slight handling was sufficient to cause rupture. It is of interest to note further that, in this patient, the internal carotid was unduly tortuous and lying in a somewhat abnormal position in its intracranial course; it was thus probably rendered more liable to damage in the event of the dura being ruptured. A. R. Cadarso and J. J. B. Goyanes,[6] also J. Cairney,[7] all refer to the unusual tortuosity which sometimes may obtain in *the internal carotid artery.*

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF SURGERY AND PATHOLOGY.

At a combined meeting of these Sections held on Feb. 4th, Mr. C. H. FAGGE (Surgery) being in the chair, a discussion on the indications for, and the value of, the

Intravenous Use of Germicides

was opened by Mr. V. ZACHARY COPE (Surgery). He would begin, he said, by defining his terms. By "germ" he meant any pathological micro-organism, whether protozoal or bacterial; by "germicide" he meant any substance of known and fixed chemical composition which would kill germs, either directly when brought into contact with them or indirectly by unfavourably affecting their environment in the body. To confine the discussion to direct bactericidal effects would be to omit valuable data. To be of value a germicide should have only a small toxic action on the host in the doses employed; the intravenous route was chosen when administration by the alimentary tract was contra-indicated because of its irritant effect, or because its value was diminished by the body liquids. When the diseased condition was widespread *in the body, the intravenous* was the ideal route, always on the understanding that the body tissues were not deleteriously affected. The germ-killing efficacy of a preparation was arrived at either in the test-tube or in animals, but the supreme proof must always be the clinical effect in the human subject. He recalled that salvarsan was ten times as lethal to the Leishman-Donovan body in vitro as was tartar emetic, but in the human subject salvarsan was no good as a treatment for leishmaniasis, whereas tartar *emetic was specific. Intravenous therapy* had been more successful with protozoa than with bacteria. Striking examples were the effects of compounds of arsenic upon the spirochætes of syphilis, frambœsia, and relapsing fever, of the compounds of antimony on the Leishman-Donovan body, of emetine hydrochloride on the *Entamœba histolytica,* and of quinine on the parasite of malaria.

The intravenous injection of germicides in the case of bacteria was not on so sure a foundation as in the case of protozoa. According to Prof. Alexander Fleming none of the ordinary antiseptics had a bactericidal effect in the blood stream; but there was reason, he thought, for expecting the production of a substance having definite value as a universal germicide when put into the blood stream. The intravenous injection of salvarsan had received clinical justification in malignant pustule, but for the septicæmic or generalised form of anthrax salvarsan was admittedly useless. Morgenroth reported optochin efficacious in pneumococcal pneumonia, but clinicians found it disappointing for two reasons: blindness sometimes followed its use, and it did not cure the infection. In leprosy, remarkable results had been reported from the intravenous injection of sodium salts, before the work of Leonard Rogers had shown the value of chaulmoogric and hydnocarpic acids. No direct bactericidal action on the causal organism was claimed for these drugs; they were indirect germicides. Sanocrysin was at one time spoken highly of, but the present opinion was that it had no direct, and only a doubtful indirect value in killing the tubercle bacillus. As its administration was not devoid of danger, the field for its use was restricted.

In the treatment of severe septic infections claims had been made at different times but regretfully it could still be said that no reliable drug for intravenous use in these cases had yet been found. A good trial had been given to both mercurochrome and the aniline dyes, but no one who had followed the work of A. Fleming could continue to believe that the commonly used antiseptics could exert any direct effect on organisms in the blood stream except in a strength which would poison the patient. Any effect which was traceable to them must be regarded as indirect. The clinical results were variable and unconvincing. In some cases it seemed that the disturbance following the giving of the drug had been a factor in the recovery which eventually ensued. The use of any of these drugs in a generalised infection seemed to him to be a shot in the dark.

Both surgeons and physicians had shown themselves, Mr. Cope thought, too ready to try a remedy because it was new, rather than because it had been proved to have good credentials. They were apt to believe that a drug had cured the disease because recovery followed its use. On the other hand, the laboratory worker was apt to lay down hard and fast laws. A closer coöperation between the two groups was to be encouraged.

Prof. ALEXANDER FLEMING (Pathology) said his definition of a "germicide" was quite simple—viz., something that killed microbes. Alternatively it could be expressed as a substance which entered into destructive combination with the microbe. If one were to include some mysterious power brought forth in the blood whereby its antibacterial effect was increased, then a vaccine came into the category. Nuclein was an indirect germicide; injected into a vein it increased the germicidal power of the blood. He did not intend to include in his remarks the action of drugs on protozoa. If, he said, one could not produce in blood outside the body a germicidal effect with the substance proposed, it was of no use to try to cause a germicidal effect with it in the body itself. Two conditions must be fulfilled: one must be able with safety to obtain a concentration of the germicide in the blood which would kill the microbes, and that concentration must last for a sufficiently long time for the microbes to be killed. A point to be remembered was that microbes varied in their readiness to succumb; a chemical which had a pronounced effect on one would, in the same strength, leave another apparently unharmed. If a germicide was injected into the blood, it must be at its maximum concentration as soon as it was injected. If immediately after injection one did not find a germicidal action, then a direct action could not be expected. There were various ways of testing the germicidal action of a chemical in the blood as well as the bactericidal power of blood or serum. At St. Mary's a very simple method had been developed. Some blood was taken, and mixed with anything chosen; the mixture was run between two slides and placed in an incubator, the number of colonies which developed being noted. Ordinary blood itself possessed considerable power of killing bacteria, a power which was centred in the leucocytes. Removing the leucocytes from the blood left a fluid chemically the same as blood but with no power over ordinary microbes. It was obvious, he said, that any germicide injected intravenously would be at its maximum concentration in the blood immediately after the injection—i.e., before there was time for it to be removed from the circulation. So the greatest germicidal effect should be manifest during the first few minutes after the injection was made. Many germicides which had been recommended for intravenous injection had been tested and few had passed the two conditions.

Prof. Fleming showed numerous diagrams illustrating the results of mixing blood containing a known number of bacteria with dilutions of various germicides. The effects were judged by the number of colonies developing in a slide cell during subsequent incubation. In practically every case the germicides damaged the leucocytes in a higher dilution than they damaged the bacteria, with the result that the bactericidal action of the leucocytes was prevented, and a greater number of colonies appeared in the test cell than in the control, which contained no germicide. The concentrations required in the blood to kill bacteria, as determined by this method, were such as to demand enormous and quite impracticable doses. This consideration applied to eusol, the mercury salts, mercurochrome, flavine, monsol, gentian violet, and sanocrysin. Although these results held out no hope of exerting a direct bactericidal action in the blood, it appeared that high dilutions of salvarsan, not in themselves bactericidal, increased the bactericidal power of the blood for *Streptococcus pyogenes*; there was no such effect on *S. salivarius.* This action, which he was unable to explain, indicated that factors were at work which were not understood.

DISCUSSION.

Mr. P. H. MITCHINER said that chemical antiseptics given intravenously must be of such strength as to have the optimum lethal action on the micro-organism, without impairing the defensive utility of the leucocytes or other tissue cells. And as it must be at the moment of injection that the maximum action in the blood stream would take place, it must be admitted there was small hope of getting a direct germicidal action from this procedure. His experience had led him to feel certain that in the majority of cases the intravenous injection of so-called germicides was more harmful than beneficial to patients with septicæmia. He knew of no criterion, in any individual case, as to the dose of germicide which would give the most beneficial result; at different stages of the illness different doses constituted the optimum, and the test-tube results were not a guide to what was likely to happen in the body. At St. Thomas's Hospital sanocrysin was used in 20 cases of tuberculosis, and the results were negative, though it was thought to have value in acute pneumonic cases. In streptococcal and staphylococcal septicæmias, he found a tendency among surgeons to withhold such drugs as mercuric chloride and mercurochrome until the patient was moribund; showing no great confidence in them, but using them rather as a sort of desperate last throw. Moreover cases were occasionally seen in which the septicæmia suddenly took a turn for the better without any special treatment, and in those circumstances it was at least courageous to attribute the improvement to a drug. Increased germicidal power in body tissues he attributed to protein shock, an alteration for the better in their resistance balance.

Dr. T. H. C. BENIANS thought it probable that the answer of a probationer nurse to a question on disinfectants was not very wide of the mark: "Disinfectants are nasty dangerous things; they kill bacteria and human beings." Pneumonia he regarded as a massive abscess; nothing put into the blood was likely to get into that. Those who worked at staphylococcic septicæmia in rabbits knew that there were abscesses in the kidney, and these caused the death of the animal. He did not know how far Fleming's work had traversed that of Colebrook, but in 1927 the latter demonstrated the bactericidal power of serum to hæmolytic streptococci, and devised a method of showing how much damage had been done to the phagocytic tissues of the body. In many ways the leucocytes of the blood stream were some of the least permeable cells in the body; they were not to be relied upon as a basis for judging of the damage to the phagocytic tissues. Colebrook had shown that the great trouble lay with the abscesses, and suggested that surgeons might be able to do something more drastic to clear up these. He did not think it should be said that intravenous germicides were impossible. He suggested that those who issued germicides should supply with them a form giving clinical and pathological data certified by the Medical Research Council or similar body; this should enable the clinician to determine what was likely to be efficacious in any particular type of case.

Dr. L. P. **Garrod** showed a diagram illustrating the bactericidal and bacteriostatic actions of five germicides on *Streptococcus pyogenes* in the presence of blood. Having regard to the concentration attainable in the circulating blood by intravenous medication, it appeared that none of these could be capable under such conditions of killing streptococci, and only one, acriflavine, was calculated to exert even an inhibitory action on their growth in the blood stream. The very poor results given by mercurochrome were entirely at variance with the generally accepted opinion of its powers, and he believed that a false idea of these had gained currency owing to Young's original work on the drug having been conducted with dilutions made in acid urine. Whereas Young claimed that mercurochrome killed *Staphylococcus aureus* in 15 minutes in a dilution of 1 in 10,000, four other investigators besides the speaker had failed to obtain bactericidal action with dilutions varying from 1 in 50 to 1 in 400 in neutral media, such as distilled water or blood. A probable explanation appeared to be that acids decomposed the drug, liberating a mercury salt much more actively bactericidal than mercurochrome itself.

Dr. G. W. M. **Findlay** agreed that protozoal diseases were fairly easily eradicated—e.g., bilharzia by antimony salts. Bacterial diseases were almost entirely unaffected by chemotherapeutic agents. In kala-azar the tetravalent antimony compounds had no action in vitro, yet they were very efficient in vivo. It was usual to allow the disease to go on for some weeks before giving the remedy. A parallel case was that of malaria treatment of general paralysis of the insane. Colonel James had shown that if quinine was given to a patient during his first attack of the fever, the malaria parasites were not eradicated; but if one waited until the patient had a good dose of fever before giving quinine, then it was a success. It had been found that the antitoxin content of the blood could be raised by the injection of such substances as manganese, though they had no direct specific action on the bacteria. It was possible that eventually chemotherapeutic drugs would be found which might stimulate the formation of immune bodies in bacterial diseases, and so lead to their eradication, not by a direct action on the bacteria but by harmonising with immune body activity in the tissues.

Dr. E. **Bousfield** pointed out that there was now available a more efficient antistreptococcal serum than five years ago, and this enabled one to approach cases of hæmolytic streptococcal infection with more prospect of success.

Dr. J. **Burnford** suggested that work on germicides should not be left entirely to the laboratory. There were many infections associated not with the activity of the leucocyte but with that of the lymphocyte. He would have liked to hear physicians give the results they had found from the use of reputed germicides. He could speak of an absolute cure of a case of staphylococcic pyæmia after using perchloride of mercury, and his experience of subsequent cases of the same kind treated in the same way had impressed him. On infective endocarditis he found germicides had no effect. He had seen rapid results from calcium salicylate in rheumatic infections.

SECTION OF THERAPEUTICS AND PHARMACOLOGY.

At a meeting of this Section held on Feb. 10th the chair was taken by the President, Dr. **Philip Hamill.**

Dr. E. P. **Poulton** opened a discussion on the use of

High Carbohydrate Diets in Diabetes.

He expressed dissatisfaction with the usual form of treatment, especially for children. The need for insulin, he said, almost always seemed to increase, and he had tried the high carbohydrate diet with the feeling that the results at any rate could not be worse. He outlined the arguments in favour of the high carbohydrate ration, towards which, he said, there had been a considerable movement during the last year or two, and described 27 cases in which satisfactory results had been obtained.

The average sedentary individual, he said, took about 200 or 250 g. of carbohydrate in a day. He then showed charts illustrating the old diabetic ration of carbohydrate—varying from 13 g. to 120 g. —and the increase of the carbohydrate-insulin ratio in diabetics who had been allowed 190 g. or more. In many of the cases the dose of insulin required had steadily decreased, though it usually remained about the same in children. A girl, aged 9, who had done badly under conditions of home management which were ideal for the old treatment, had done much better as soon as the carbohydrate was increased. The method of determining the ratio was the most perfect possible, a selected week having been chosen from records kept regularly for months.

Everybody treated with insulin should be given these high diets; patients felt much better with them. They were definitely indicated in phthisis, angina pectoris, arterio-sclerosis, and high blood pressure. Standard formulæ would greatly assist the calculation of the diets; Dr. Poulton showed such a formula with a carbohydrate ration of 20 g. and a fat ration of 10 g., the protein being added up at the end. With this diet it was important to give the insulin as long as possible before the meal—an hour, or even an hour and a quarter. The body had much more carbohydrate stored in it, and much more of the insulin was occupied in dealing with this, so that there was no sudden fall of blood-sugar.

OBJECTIONS TO THE HIGH CARBOHYDRATE DIET.

Dr. R. D. **Lawrence** said he had used these diets experimentally in 1926 and 1927, but had found it difficult to make life pleasant for the patients, as hypoglycæmia threatened and was very variable in its manifestations He had done some experiments on the carbohydrate-insulin ratio; he had found that a patient taking 20 g. of carbohydrate and 20 units of insulin required 75 g of carbohydrate to 30 units of insulin and 120 g. to 40 units. Thus 16 units of insulin, given fasting, in this patient was using 80 g. of carbohydrate from the tissues, making the insulin-glucose equivalent 1 : 5 He agreed that much more carbohydrate should be used than formerly; on an average between 70 and 120 g. per day. On this amount patients need not weigh their protein and fat, which was a great advantage; most patients got all the toast, bread, and fruit they wanted, and needed only two doses of insulin a day. On the high diets—at any rate in America—three or even four doses were needed. The easiest life was the life of choice for these patients. High carbohydrate diets meant more expense and more trouble.

Dr. T. C. HUNT mentioned striking results he had seen from Prof. Falta's standard diet of 165 g. of carbohydrate, allowing the patients to adjust the fat to taste. The object of a low carbohydrate diet must be to obtain some regeneration in the islet cells. This was not known ever to have occurred, and there was a suggestion that the cells, at any rate, after a rest, required some blood-sugar for their recovery. Muscular development in growing children, tuberculosis, infective states, and pre-operative periods, all called for higher carbohydrate diets.

He showed figures from a number of patients who had broken their rules and taken a full carbohydrate diet. In several cases the blood-sugar had risen enormously without any glycosuria. This was regarded as a very serious condition; the development of this high threshold was probably a bad sign. Other cases had done quite well. In another series of cases the low carbohydrate diet had been maintained and in all of these glycosuria had persisted and the blood-sugar had risen. The two sets were not strictly comparable, but did not show the marked difference that might be anticipated. The advantages of the high diet were that the patients could do more work and could direct their diet by appetite and live a less fussy life. Carbohydrates were cheap foods, and more fat could be given with them to increase the total calorie intake. It was difficult to say how much of the benefit was due to the raised carbohydrate and how much to the greater calorie value in the high carbohydrate diet. Diabetics seemed to be either stationary or progressive from the first, and the amount of carbohydrate allowed—between 50 and 150 g.—had little effect on the ultimate outcome.

THE PATIENT'S TASTES AND HAPPINESS.

Prof. J. A. NIXON said he had been using the higher carbohydrate diets since 1922, as he believed that the object of insulin therapy was to allow normal amounts of carbohydrate as far as possible. He did not claim that more patients had been enabled to do without insulin, but he was convinced that the patients kept their régime very much better and grumbled less. To get in the full amount of fat prescribed had always been a difficulty with the old diets, but about 70 g. were taken easily. He never prescribed a diet without seeing first what the patient did on the diet of his own choice. Patients did not often overstep 150 g. of carbohydrate when lying at rest. Most people would be quite content to cut down their carbohydrate to conform with two daily injections of insulin. It was much too early to say whether or not the higher or—as he preferred to call it—the adequate carbohydrate diet was affecting the arteries, but Joslin said that the age of arterio-sclerosis seemed to have been postponed.

Dr. A. P. THOMSON described satisfactory results from the high carbohydrate diet. He had found that out-patients who broke their dietary regulations had done rather better and were certainly healthier and happier than those who had obeyed, although their blood-sugar was higher. He now had records of 400 cases on high carbohydrate diet. He agreed that protein and fat in these diets should be determined by the patient to taste. This greatly simplified instructions; patients were simply told to take so many carbohydrate rations. Clinically they remained in good condition, and laboratory investigation had shown no serious results; the blood-sugar remained fairly constant. No healthy person took exactly the same amount of protein and fat each day; the amounts varied with exercise and other factors. Men lived in homes and not in calorimeters. It had been alleged that low blood-sugar encouraged recovery of islet tissue, but in Dr. Thomson's experience there was never improvement after the first six months. It was therefore worth ordering rigid diet for six months in an early case, but not for longer. One of the troubles of mothers was the obesity of the trunk developed on a low carbohydrate diet; the children's figures were much improved by the higher diets.

Dr. O. F. LEYTON stressed the importance of treating individuals. A standard diet was a medical impertinence. His methods were those of Prof. J. A. Nixon. The average carbohydrate ration was 120 g. daily, and most people were satisfied with that. Cases that were not very mild needed expensive doses of insulin if they were to have high carbohydrate diet. Others showed a tendency to hypoglycæmia. There were many exceptions to the rule that recovery was not seen in the pancreas after the first six months. In hospital patients it was very exceptional to be able to keep the blood-sugar steadily below 0·15 per cent. Alcohol might act as a deterrent in the regeneration of the pancreas.

Dr. GEORGE GRAHAM thought the carbohydrate should be increased to the region of 100 g. a day. The ratio between the increase of carbohydrate and the dose of insulin varied considerably. Children who swing very readily from high to low blood-sugar were much easier to control on the new diets. The right balance between fat and carbohydrate must be determined, but would require prolonged clinical observations. It was difficult to keep some patients free from acetonuria before their doses of insulin; the risk of coma, if the insulin were for any reason omitted, might prove much greater for patients on the high carbohydrate diet.

Dr. P. J. CAMMIDGE said that he had never believed that insulin would cure diabetes, and had always regarded it as a means of securing an average diet. To this the new diets were approximating. A good deal depended on the ratio between carbohydrate and fat. The high diets were particularly useful for children, who were much happier on them, and—with few exceptions where there were associated pituitary disturbances—did extremely well. It was very difficult to obtain a carbohydrate-insulin ratio with any accuracy, because of the great variation in the absorption of foodstuffs. The nearer the diet of a diabetic approached to a normal average diet the better.

Dr. PAUL WEISS (Homburg) agreed that insulin should be used to give patients the benefits of full diet. Some authorities preferred small amounts of carbohydrate with large amounts of fat; this was an acid diet, while the high carbohydrate diet was an alkaline one, and less likely to lead to acidosis. The best diet of all was the vegetable diet; this meant plenty of calcium, which was especially important for children, though calcium was needed by all diabetics. An alkaline diet—e.g., carbohydrate with milk, fruit, and potatoes—was a calcium-conserving liet. Insulin injections should be given strictly to ime, preferably every eight hours, especially with igh carbohydrate diets. This ensured better nights, rith less risk of hypoglycæmia in the night. The revention of coma lay in the care of the blood-sugar. 'he best diet for this purpose was high carbohydrate nd vegetables with insulin.

Dr. POULTON, in reply, said that there was a conensus of opinion that carbohydrate diets should be aised; the problem was by how much? He had had o difficulty with hypoglycæmia provided the patients id not do foolish things. He had not noticed the aising of the threshold.

MEDICAL SOCIETY OF LONDON.

AT a meeting of this Society on Feb. 9th Dr. R. A. OUNG, the President, took the chair, and a discussion n the

Choice of Anæsthetics

'as opened by Dr. I. W. MAGILL. Anæsthesia, he said, ad done much to help the progress of surgery, and r a long time the surgeons were satisfied if their atients were presented to them sufficiently anæs-letised, the method of bringing about that state ldom being questioned. But successful results, pecially nowadays, could seldom be got by mere exterity of the surgeon alone; they were the roducts of well-organised team-work in which the aæsthetist took an important share. Chloroform ad ether would produce good operative conditions r the surgeon when administered in a simple way, ut their wholesale or routine use was not always in e patients' best interests. Both were definitely xic, and did nothing to absolve the patient from npleasant anticipation. Moreover, the recovery eriod, with its nausea and discomfort, was an xperience few wished to repeat, so that often the næsthetic was dreaded more than was the operation. 'he search for other agents had been largely deter-ined by the desire to limit the quantities of chloro-rm or ether used, or to dispense with them altogether. 'his search had resulted in the trial of morphia, opolamine, nitrous oxide and oxygen, ethylene, ical and spinal anæsthesia, avertin, paraldehyde, nd the derivatives of barbituric acid. It could be id that, except intraspinal percaine, none of these lministered alone and in safe dosage would produce perative conditions in the abdomen as good as those btainable with chloroform and ether. It was in forts to avoid the disadvantages of each that progress ad been made towards better anæsthetics, to what undy, of the Mayo Clinic, had called "balanced aæsthesia."

Dr. Magill claimed that ethylene was much more itisfactory than nitrous oxide; it gave better laxation, and could be used with as much as 20 30 per cent. of oxygen. It was especially valuable thoracoplasty, in which suboxygenation was ndesirable and a speedy return to consciousness ery important. Risk of explosion confined its use cases in which cautery or diathermy was not mployed.

The greatest advances had been made in the field of asal hypnosis, which protected the patient from sychic shock. He had no recollection of the journey rom bed to operating theatre, nor of the induction eriod. Also it was possible greatly to reduce the uantity of anæsthetic used, so that ether could often be dispensed with, while post-operative nausea and vomiting were either abolished or greatly reduced. Amnesia or sleep followed for a definite period after the operation, but the patient might be restless during this unconscious period and had to be watched. The most valuable basal hypnotics available were paraldehyde, avertin, and some derivatives of barbituric acid. The first of these was administered per rectum, the average dose being reckoned as one drachm per stone of body-weight. It was given quite slowly one and a half hours before the operation, in ten times its quantity of normal saline. Atropine was given as usual, and morphia to adults. Paraldehyde was specially useful for children, but tact and skill were called for. Avertin was also given per rectum, the dose being 100 mg. per kg. of body-weight, so dissolved in water as to make a 2·5 per cent. solution. Barbiturates must be toxic enough to give full effect on a small dose, their action must be sufficiently short, and they must be administrable by intravenous injection. Any of the barbiturates—which included luminal, allonal, medinal, veronal, and dial—would produce hypnosis, and their important feature was the long period of sleep after the operation, which might be 24, even 36 hours. Dr. Magill had a good word for three of the barbiturate preparations, placing them in the following order of merit: nembutal, sodium amytal, and pernocton. He regarded nembutal[1] as the most outstanding anæsthetic drug to date, one which was sure to be of great value in medical practice—i.e., in epilepsy, convulsions, eclampsia, delirium tremens, hysteria, and any nausea. The popularity of spinal anæsthesia had oscillated, depending on the discovery of some new drug, but he thought much of the hostile criticism directed against stovaine was due to faulty technique. The drawbacks of spinal analgesia were not entirely due to the toxicity of the drug; they were referable mostly to the fall of blood pressure which followed spinal puncture; and if measures were taken to circumvent this fall—e.g., by the use of ephedrine—the disadvantage was greatly reduced. At the Mayo Clinic, spinal analgesia with novocain was the anæsthetic of choice for almost all abdominal operations. Percaine was effective in such a high dilution as 1 in 1500 so that its toxicity was a negligible quantity, and it gave a long period of anæsthesia. With percaine the relaxation for a high abdominal operation was complete, and this was a valuable asset in the type of patient who was difficult to relax, even under deep ether or chloroform anæsthesia.

Dr. Magill also referred to the value of carbon dioxide. This respiratory stimulant enabled the anæsthetist to hasten induction when respiration of the patient was sluggish, or to secure a deeper inspiration during the course of the operation, while towards the end of the surgeon's work it hastened the elimination of the anæsthetic and the re-establishment of activity at the pulmonary bases. He concluded by pointing out that what might be a safe drug or a safe apparatus in the hands of one person might be a source of danger when entrusted to another, for always it was the anæsthetist who counted.

DISCUSSION.

Sir FRANCIS SHIPWAY said that every surgeon and physician knew that slow induction with gas followed by deep ether anæsthesia often produced bad results, not only in respect of vomiting, but also of pulmonary complications. It was often said that the mortality after chloroform was high, but he thought the mortality from ether was equally high, as could be ascertained by following cases up afterwards. Local block infiltration and spinal anæsthesia had been used now for some years, but surgeons in this country were noticeably reluctant to agree to their use, largely because, from the surgeon's standpoint, the anæsthetist had provided such an effective narcosis. Sir Francis now thought that spinal anæsthesia ought to be more used, certainly for the upper abdomen. Nembutal and avertin could be employed with great satisfaction to both patient and surgeon. He did not propose to make any comparison between these two drugs, there was room for both; indeed there seemed to be a great future for nembutal. Whether it should be given by the mouth or intravenously was, he thought, open to question. Avertin he regarded as an extraordinarily valuable drug, and he preferred it to paraldehyde, especially for children. Many children had had tonsillar enucleation done, and even appendicectomy, without knowing that they had had an operation. Statements such as that these drugs were not safe for throat work, that they abolished the cough reflex, he had not found confirmed in his experience. He was using them frequently, and saw no disadvantages from their employment. He did not think it fair to say one ought not to anæsthetise a patient for a nose operation without using the intratracheal method; nowadays he never used the latter method, though he gave anæsthetics for many nose and throat cases. Generally speaking, the simpler the method the better for the patient. The apprehension or terror he regarded as so important that every endeavour should be made to minimise it. The basal narcotics got over this difficulty, and made one reflect that if only these had been available during the war, an immense amount of mental anguish and suffering might have been avoided.

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[1] Magill, I. W.: THE LANCET, Jan. 10th, p. 74.

Dr. C. F. HADFIELD thought Sir Francis Shipway had exaggerated the danger of pulmonary complications after ether anæsthesia. He regarded the various forms of basal anæsthesia as somewhat erratic in their action.

Mr. C. HAMBLEN THOMAS asked whether any particular form of anæsthesia was associated with the prevalence of pulmonary abscesses after tonsil operations. For operations on the upper air passages he had found paraldehyde easy to work with; patients were sleepy and did not struggle.

Dr. GEOFFREY MARSHALL said he frequently saw cases with pulmonary complications after operation, and he shared Sir Francis Shipway's dislike of chloroform and ether as anæsthetics; they were primitive, and it was high time they were displaced by others. During the later stages of the war gas and oxygen was chiefly used, with local infiltration of the abdominal wall with novocain, and the results were so good that he was surprised that this did not afterwards become the routine. The novocain injection took no more than two minutes, and the relaxation of the abdominal wall was complete. He was not contending that this was the best anæsthetic now. In future, patients would demand to be put to sleep with the anæsthetic while they were in bed; this enormously reduced distress and apprehension, and he believed it facilitated recovery.

Dr. A. W. MATTHEW thought it was a mistake to base the dosage of basal hypnotics entirely upon the weight of the patient; his idiosyncrasy and general state ought also to be considered.

Sir JAMES DUNDAS-GRANT spoke of a good experience he had had for ear, nose, and throat operations with avertin, which he regarded as one of the greatest blessings the surgeon could have, especially with a patient who was not too excitable.

Mr. ARTHUR EDMUNDS said he had that day done a whole afternoon's operations under ether anæsthesia. He favoured gas and oxygen anæsthesia if it was done skilfully. He used but little spinal anæsthesia. He had lived to see many "stunts" in this domain come and go, yet they did not entirely go, for they had a use for certain cases.

Mr. ZACHARY COPE gave his own experiences with anæsthetics which had been administered to him.

Sir WILLIAM WILLCOX pointed out some dangers in the use of some of these drugs, if unskilfully used, from the toxicological point of view. The disadvantage of the basal anæsthetics was that when once they had been put into the body they could not be removed if the patient was in difficulties. In cases in which anæsthesia was induced by giving small quantities gradually there was not the same danger. Luminal he had had some experience with, and it was a very dangerous poison, one in which the margin between a therapeutic and a poisonous dose was of the smallest. He had seen many fatal cases of poisoning from the administration of the barbituric group, and if one got beyond a certain point the case was hopeless; there ensued broncho-pneumonia and a rise of temperature, and recovery after that stage was reached was very rare.

The discussion was continued by Dr. Jennings Hoskin, Dr. Frankiss Evans, Mr. H. B. Butler, Mr. Hope Carlton, Dr. Parry Price, Mr. J. L. Joyce, and the President. Dr. Magill and Sir Francis Shipway replied.

LEEDS PUBLIC ASSISTANCE HOSPITALS.—The Leeds town council, by a large majority, has rescinded its recent resolution to appropriate St. James's Hospital, St. Mary's Infirmary, and the Rothwell Institution for use as hospitals under the Public Health Acts. The Minister of Health had expressed the hope that the council "would now appropriate the institutions, or at least two of them, if the full scheme was not immediately possible," on the ground that "it is essential that local authorities should avail themselves of any practicable opportunity of separating from the poor-law the accommodation required for the institutional treatment of the sick." The opinion was expressed in the council that "Leeds people know better than the Ministry of Health what is in the best interests of the city."

HOSPITAL ACCOMMODATION AT HULL.—On Thursday last week Princess Mary opened the Sutton branch of the Hull Royal Infirmary, some six miles from the city, the largest extension of that institution which has ever been made. The branch is a self-contained hospital standing in an estate of nearly 50 acres, given by Sir Philip Reckitt. The present accommodation is for 100 beds, but the buildings are so laid out as to admit of the gradual development of the hospital to over 500 beds. The cost has exceeded £100,000, of which £10,000 has still to be raised. The sterilising apparatus is said to be the first equipment of its kind that has been installed in this country. The main feature is that the sterilisers and pipes are recessed into the walls, leaving only the doors and controls visible; sterilising will be done by dry heat. The mansion, which was formerly occupied by Sir Philip Reckitt, has been converted into a nurses' home. The Hull health and public assistance committee has adopted a report of the medical officer, Dr. W. M. Frazer, upon the hospital accommodation of the city which will involve an expenditure spread over five years, of £366,992, in addition to £59,[illegible] for the coming year. The former workhouse, which is still used for poor-law purposes, is to be converted into a large hospital. At present there are 928 beds available for the general hospital service of the city, to which must be added the 100 provided by the Sutton branch of the infirmary referred to above. Since, however, the Royal Infirmary provides beds for cases from the East Riding and North Lincolnshire (1,194 last year, as compared with 2096 from Hull) the accommodation available for the city is considerably reduced.

REVIEWS AND NOTICES OF BOOKS

oyalties: Mesopotamia, 1914-1917.

By Lieut.-Colonel Sir ARNOLD T. WILSON, K.C.I.E., C.S.I., C.M.G., D.S.O. London: Humphrey Milford, Oxford University Press. 1930. Pp. 340. 25s.

Sir Arnold Wilson, the author of a widely read olume on the Persian Gulf and of a valuable biblioaphy of Persian literature, has now written a book wider interest—namely, a personal and historical ecord of the campaign in Turkish Arabia which, om the number of troops engaged there, the terrible sses, the cost and the huge area covered, was one of e greatest military adventures of the world war. ome of the ground has been covered already by riters and in official publications, notably in the Official History of the Great War," while the author mself, in his work on the Persian Gulf, has given a ccinct history of the area, a task for which he was ted by his important work alike as a civil com- issioner, a political resident, and a consul-general various parts of Arabia and Persia. But the tempt in this volume is to give within the compass a single work a comprehensive view of the opera- ons in Mesopotamia, so that the skill and devotion ay be revealed of those who, whether from a olitical, civil, or military position, attempted to habilitate a region which had been ruined by ars of misrule. The book is written with extreme ankness, and it is dedicated in simple words to e memory of a large and distinguished group of ritish and Indian soldiers and civilians who lost eir lives during the campaign.

The references to medical administration, as a rt of the military undertakings, will be the portion the book of most immediate concern to our readers; ey are numerous, and some of the details make tremely painful reading. It is an open secret that rious miscalculations occurred from the beginning, d that the horrors, whose occurrence later became mmon knowledge, were due to the inability of the rmy Headquarters in India and of the India Office recognise the scale of the operations which had gun. In 1916 the responsibility for the Expedi- onary Force in Mesopotamia had been transferred om the Government of India to the Home Govern- ent, but the former had already appointed a ommission to inquire into the arrangements in esopotamia during and subsequent to 1916. The port of this Commission, with a reinforced personnel d extended term of reference, was not immediately ablished, probably because it was felt that the tcome of an investigation set on foot in India would t satisfy public opinion. Accordingly the British overnment appointed Commissioners to inquire to the operations both in Gallipoli and in Mesopo- mia, and in the latter case to report, among other ings, on "the provision for the sick and wounded." he conclusions of the Commissioners closed, it will remembered, with a serious allotment of blame, d Sir Arnold quotes the findings which revealed at the medical provision for the Mesopotamia mpaign were from the beginning insufficient.

> "By reason of the continuance of this insufficiency," runs e report, "there was a lamentable breakdown in the care the sick and wounded after the battle of Ctesiphon and fter the battles of January, 1916. The defects of medical rovision caused avoidable suffering to the sick and ounded, and during the breakdown in the winter of 915-16 this suffering was most lamentably severe."

s is well known, the personal actions or inactions of certain individual medical men were subjected to severe criticism by the Commission, and Sir Arnold points to the fact that the official records confirmed these conclusions. The message of this part of his book is in keeping with the following words of the report of the Commissioners:—

> "Looking at the facts, which from the first must have been apparent to any administrator, military or civilian, who gave a few minutes' consideration to the map and to the conditions in Mesopotamia, the want of foresight and the provision for the most fundamental needs of the expedition reflects discredit upon the organising aptitude of all the authorities concerned."

Want of coöperation between military and civil authorities, which is so evident from page after page of Sir Arnold's recollections, has caused tragedies to armies many times over in the history of the world; yet, reading between the lines of Sir Arnold's recollections, it would seem that such disunion could be remedied promptly on the appearance of its symptoms, though it must become intractable with the passage of time causing a multiplication of errors and recriminations.

The format of the book is all that can be desired, and the exacting in such important matters will recognise the excellence of the bibliography and index. A map of Lower Mesopotamia—scale about 40 miles to the inch—enables the course of the operations to be followed, and many portraits of those who were prominent in them, living and dead, are included.

The Unknown Self.

By GEORG GRODDECK, M.D., author of "The Book of the It." Translated by M. COLLINS. London: C. W. Daniel Company. 1930. Pp. 207. 7*s.* 6*d.*

IN a preface to this collection of non-scientific and individualist essays the translator shows how in the history of medicine the balance of power has swayed between the artists and the scientists, vitalists and atomists, nominalists and realists, empiricists and dogmatists, or what not; and that, under the influence of the schools of psychological analysis, medicine is beginning once more to examine its fundamental principles. Dr. Groddeck has, wittingly or unwittingly, found his way back to the vitalistic standpoint of Hippocrates, who stressed "the essential unity of the organism . . . its provision for the future, its 'initiative' in general." In place of the *physis* Groddeck offers us the *It*, which uses the ego as a mask to hide itself from the curiosity of mankind, and psycho-analysis is for him the method that leads nearest to the It. Here is, however, no exposition of that subject except so far as it is illustrated by brief clinical stories that would startle the psycho-analyst, for in them every rule of technique is broken. The non-analytically minded physician will be equally startled at the suggestion, for example, that the It may employ a germ to destroy all its guilt in a fever, or at the statement that many patients with a weekly rhythm of evacuation have been made artificially ill all their lives because they were supposed to be constipated. Nor does Groddeck spare himself—"a pious pretender, who gives honour in word and thought to the It and still, in essence, believes in his ego," who describes the origin in his infantile unconscious of "the notorious Groddeckian bark which has never since deserted me, but always gives my greeting to the morn." He is a disturber of the peace and owes a lot to his translator, whose prefatory survey of medicine and its difficulties gives us philosophical preparation for the strong meat that follows.

Lehrbuch der Chirurgie.

Edited by W. DENK. Vienna: Julius Springer. 1930. Two vols. Pp. 869. R.M.69.

THIS book is written by 19 contributors of eminence in the German-speaking surgical world, all of them being former pupils of von Eiselsberg, to whom the book is dedicated. It is built up on the usual plan of large text-books for students, dealing with the whole of surgery including the specialties, except ophthalmic surgery. We have endeavoured by random sampling of its contents to ascertain whether this work gives full systematic and up-to-date accounts of the different branches of surgery, and have come to the conclusion that it is an excellent production. It deserves a wide public in view of the high surgical standing of the contributors. A large number of good illustrations are supplied.

Modern Sewage Disposal and Hygienics.

By S. H. ADAMS, A.M.I.C.E. London: E. and F. Spon, Ltd. 1930. Pp. 474. 25s.

THIS is a difficult book to classify. It is not clear to what class of readers it is intended to appeal, and yet readers of the most varied classes would find it interesting if they could be persuaded to buy it. The first chapter, on the history of sanitation and of much else, is a chatty, but concise description of the "good old times" and of the better but less picturesque times which have followed them, and is richly illustrated with reproductions of old prints. This is followed by a chapter on the Ministry of Health, and then comes the principal part of the book—a series of chapters on sewage treatment in which most of the processes which have been used in this or other civilised countries are described, mainly, it would appear, in the words of the authors of the processes. Here also the illustrations are excellent. The production of the book is good; but it is irritating to see chemical symbols written with the numbers referring to atoms in alignment with the symbols. "Carburetted hydrogen C2H2," whether or not it is available for plant life, is not usually recognised as a product of the changes going on when sewage is brought into contact with land.

This would be a useful book in the library of a medical officer of health or of a lecturer on hygiene. Those who require precise guidance in actual working or design of plant will not find here the critical discrimination which would help them. The work is, in fact, rather a compendium of information presented in a very interesting way than a text-book for the student or a work of reference for the consultant. The author may have had such an intention before him.

A Text-book of Pathology.

Edited by E. T. BELL, M.D., Professor of Pathology in the University of Minnesota, Minneapolis, Minn. London: Henry Kimpton. 1930. Pp. 627. 36s.

THERE has been in recent years an increasing demand for smaller text-books in medical subjects. Synopses, outlines, and "shorter" editions have been published in most branches. So far this tendency has not affected pathology to any great extent, but every teacher has had requests from students to recommend a smaller treatise than the standard works in this subject. This book, although by no means a mere skeleton, will help to meet such a demand. It actually contains 627 pages, but its large type, numerous paragraphs, and 316 illustrations take up so much space that the number of words is much less than in books such as Muir's and MacCallum's.

Prof. Bell has written the greater part of the book, but five collaborators have assisted with var chapters. The work follows the conventional division into general and special pathology, and is writ in the concise and dogmatic manner necessary keep it within a small compass. At the end of chapter there is a select list of references for study. This is an unusual feature in a small book, and adds greatly to its value. The danger is that these references will not be followed up by the average student, who will be satisfied with the outline of the subject, not realising that in the to mention everything, nothing is fully descri For instance, in discussing syphilitic aortitis mention is made of the destruction of the ela tissue in the media; non-syphilitic aneurysms attributed to arterio-sclerosis without any re to medial degeneration; and mural vegetations said to be as common in rheumatic as in ma endocarditis. However, blemishes of this kind not interfere with the usefulness of the book, it is used as it is obviously intended to be, only as introduction to pathology.

Exercise, its Functions, Varieties, and Applications.

By Dr. ADOLPHE ABRAHAMS. London: William Heinemann, Ltd. 1930. Pp. 92. 3s. 6d.

A YEAR or two ago Dr. Abrahams collaborated with his brother in issuing a guide to training,[1] based on medical and physiological knowledge with a background of personal experience, for both brothers are distinguished track athletes. Within fewer than 200 pages they set out in non-technical language everything about training and competing which the athlete ought to know, and their views were wise and sound. Dr. Abrahams has now followed this up by a volume on exercises in a series of popular health manuals. There can be no criticism of the subject matter of this manual or of its manner of presentation, but one may perhaps be permitted to doubt whether the average Englishman will not be more amused than stimulated by the recital of so many generalities about exercise, a subject on which he is apt to consider himself at any rate his own personal authority. There is however one group of individuals to whom the book should supply a real need—namely, those with ever-increasing shortness of breath, stiff muscles and rebellious livers, and who, in spite of repeated medical advice, are unable to face the problems of exercise. To these, unfamiliar with the technique of the embarrassingly large choice of activities they will find at their disposal, this manual should provide the necessary spur and fulfil the rôle of the cam which has earned such a well-deserved reputation in the training of sluggards of a lower species.

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[1] Training for Athletics. By H. M. Abrahams and Dr. A. Abrahams, in collaboration with Lord Burghley, D. G. A. L F. R. Gaby, B. Howard Baker, and M. C. Nokes. Londo George Bell and Sons. 1928. Pp. 189. 5s.

THE LANCET.

ONDON; SATURDAY, FEBRUARY 14, 1931.

HEALTH PROPAGANDA.

Some of the hygienic dovecotes of America were oticeably fluttered last summer by Dr. Robert utchison's speech at Winnipeg on The Pursuit Health.[1] Not only did Dr. Hutchison ondemn this pursuit as above all things unhealthy, it he suggested that its well-meaning promoters e actually damaging the community by their forts to create a "health conscience." The old norance about the body and stolid resignation its ills was probably, he said, a more "healthy" titude, and certainly a happier one, than the odern curiosity and over-anxiety. A high andard of physique does not necessarily make ople more efficient and alert, and the emphasis ow being laid on physical welfare is, he thinks, trimental to what is far more important—mely, character. We are now producing hypoondriasis—individual, vicarious, and national. ose who seek to save their health are losing it imaginary ailments and crankiness and fear. rents fuss over their children, and children over eir parents. Health societies, health weeks, pular lectures and articles, booklets, leaflets, ogans, and even the legislature, all play their rt in increasing sickness by suggestion. And ost of their propaganda is based on fallacies—the llacy that health is hard to attain and keep, and e fallacy that it can only be got by following les. The way of health, as Sir Thomas Horder s put it, is too often regarded as a tight rope ong which we make a slow and trepidating ogress; whereas it is really a broad and well-ved road, and the wayfaring man must be a fool deed if he errs therein. Only one health rule, id Dr. Hutchison, is universally applicable, d that is moderation—moderation in all things, en in being moderate.

These arguments, even in summary, are a allenge to an important section of our profession show cause for its endeavours, and the allenger undoubtedly represents a large body sane, if silent, opinion. In pointing out that alth is only a means to an end, Dr. Hutchison d those who think with him would no doubt ree that physical fitness helps people to be sound mind and temper, but they are vigorously acting against a craze in which it has become lf-conscious. So far, at least, so good. We should admit that self-consciousness is as undesirable personal hygiene as it is in personal virtue learning. But is it not inevitable to a stage of ansition? Are these objections to health teaching free from that obscurantist opposition which hinders every form of education because it sees the danger, rather than the promise, of a little knowledge? And is it true that medicine has nothing to offer the public beyond St. Paul's counsel of temperance? Faced with the distresses of modern society, must we remain silent about fresh air, fresh food, and flies? Is there nothing to be said about breeding and pregnancy and infancy and childhood? Must we really leave the slums to their unconscious health for fear a little enlightenment may make them over-anxious? To questions of this kind most of us will answer, No. We will grant that young and old do well to learn a few of the elements of physiology; we will allow the missionaries of cleanliness to preach their gospel over dustbins and dejecta; we will even countenance a few cautious words about diet, provided there is no mention of vitamins. But we will draw the line, and firmly, at any emphasis on *disease*. Just as the churches nowadays concentrate on goodness rather than sin, we shall illuminate the sanitary rather than the seamy side of life, and thus avoid the worst of that hypochondriasis which is so evidently deplorable.

Is this a possible compromise? The ideal is to raise a generation capable of rational living and free from neurosis because it sees the abnormal in terms of the normal rather than vice versa. If every serious deviation from health could be brought at once to the doctor as a matter of course, there would be no need for potential sufferers to be told about their potential diseases. But how are people to know what symptoms are serious unless they are specifically told about them? If we are to spot disease in its earliest stages we must either encourage the public to bring every trifling ailment for our consideration, or we must spread alarming information about those pathological conditions that are most commonly disregarded until too late. Either policy creates or increases hypochondriasis on a very large scale, and Dr. Hutchison would have us eschew them both. Most diseases, he says, either cannot be detected early, or, if they are, little can be done to stop them unless one is prepared to give up for the sake of life, all that makes life worth living. That is Dr. Hutchison's view, but it is inconsistent with the recurring cry for earlier diagnosis from physicians and surgeons, and gynæcologists. The chief case in point, which illustrates the others, is cancer. In a lecture we published on Jan. 3rd, Prof. Beckwith Whitehouse said:

> "We hear at times a certain amount of adverse criticism of cancer propaganda work and of the development of a state of cancerophobia in the middle-aged matron of to-day. Personally, I regard this as a healthy sign and a mark of progress. Without a certain amount of fear we shall not get women, especially of the uneducated classes, to submit themselves to the careful and detailed investigation necessary to ensure a correct diagnosis. . . . A very strong stimulus is necessary to make her seek advice. The only stimulus that we possess *is* cancerophobia, and for that reason I do not deprecate, I welcome it! Anyone, I am sure, would rather examine 100 women and cure their 'phobias' by proving there is no malignant disease present, than be in

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[1] Canad. Med. Assoc. Jour., January, 1931, p. 16.

attendance during the last two or three months on some poor creature who thought that her symptoms were 'only due to the change.'"

Thus Prof. WHITEHOUSE, like Lord MOYNIHAN and many others, would make free use of fear as a weapon against the more physical disorders, and their arguments are certainly cogent enough. The British Empire Cancer Campaign, in its new handbook "The Truth about Cancer," is conspicuously unemotional and even reassuring; but its preface expresses a wish to spread an interest in cancer among those who are at present undisturbed about it. Almost everywhere in public health propaganda we find the same desire to shed an uncomfortable light among those that sit in darkness. "The public really are indifferent," writes Dr. JOHN MACMILLAN,[2] medical officer of health for Woolwich. "There is little evidence, except possibly in the case of the expectant mother, that healthy adults desire education in health matters." He goes on, however, to speak of the value of lectures:

> "It is said that only the converted attend such lectures, but that is not my experience. Different lectures attract different types of audiences. A lecture on cancer attracts the middle-aged; a lecture on venereal disease the young. The tuberculosis audience is totally different from the psychological audience. A lecture on diet exercises a fascination for the dyspeptic, while one on sunshine attracts a representative but, unfortunately, less numerous audience than any of the others mentioned. It follows, therefore, that various sections of the community respond to different stimuli, and it may be that if we are persistent in developing such stimuli so as to attract all classes of the community, this subsidiary importance of lectures will be invaluable. . . . The present methods of stimulating interest are so few that none of them can be neglected."

In his enthusiasm for instruction, Dr. MACMILLAN almost seems an artist for art's sake, and the sight of his modern picture makes one thankful to look again at Dr. HUTCHISON'S more sophisticated undertones. Each in its own way lends colour to Dr. WILLIAM BROWN'S assertion (to a church congress last year) that the *idea of being ill* is nowadays being implanted in the public mind and so realising itself.

BACTERIOPHAGE IN INTESTINAL INFECTIONS.

FROM time to time we have reviewed reports on bacteriophage as a specific in the treatment of cholera and dysentery. Following upon the work of IGOR ASHESHOV and his colleagues, it has been established that for the satisfactory destruction of vibrios under field conditions a single strain of bacteriophage does not suffice, since certain individuals escape its action and give rise to resistant secondary cultures.[3] Polyvalency is therefore required, and this may be obtained by combining three types of anticholera bacteriophage which ASHESHOV has distinguished. These are mutually complementary and together can cause the total lysis and death of all the types of vibrio met with in clinical cholera. With this extended knowledge, and largely aided by grants from the Indian Medical Research Fund Association, investigation of the therapeutic value of the bacteriophage has continued, and recent reports[4] from Assam include some encouraging results. The practice at the King Edward VII. Memorial Pasteur Institute of Shillong, from which they emanate, has been to prepare a combined dysentery and cholera bacteriophage incorporating multiple strains of the lytic agent (including ASHESHOV'S three cholera types) grown on at least five strains of cholera and six strains of dysentery bacilli. It has been found that preparations thus made are more stable than those prepared separately from individual strains of bacteriophage and subsequently mixed. Last year the institute issued 130,8[illegible] doses of its combined cholera-dysentery bacteriophage, and it has been extensively used in the treatment of dysentery in Assam tea gardens. By the issue of report sheets a praiseworthy effort has been made to obtain detailed accounts of the results which have followed its use, but here failure has been experienced, for only in about 7 per cent. of cases have reports been returned. From this meagre number we find that among 293 cases of acute dysentery there were eight deaths, and among 32 cases of the chronic disease, 17. These figures do not seem to be very favourable, but they cannot be assessed without knowledge of the current mortality of this disease—one in which the severity and mortality varies extremely from time to time and from place to place. Parallel series of cases, adequately controlled, are needed to establish the value of the procedure.

Details are given of localised outbreaks of cholera in a single village of 744 inhabitants. The disease appeared on Oct. 10th and by the night of the 17th had caused 71 cases with 51 deaths. At that time the bacteriophage became available and during the rest of the epidemic, which ended on the 28th, a majority of cases were treated orally by this means. In this period there were 72 further cases of the disease with 19 deaths. The patients who actually received the bacteriophage comprised 59 cases with seven deaths; so that between Oct. 18th and 28th the results may be summarised as follows:—

	Cases.		Deaths.
Treated by bacteriophage ..	59	....	7
Not treated by bacteriophage	13	....	12

These results may not actually be as demonstrati as they appear, since they are complicated by the fact that active cholera vaccination on an extensiv scale was started on Oct. 22nd; but it is evident from a scrutiny of the details of the report, that a somewhat dramatic change in the type of the disease took place on the 19th, and this was the day when bacteriophage therapy began in earnest.

These reports form a further contribution to the swelling mass of literature upon bacteriopha therapy, about whose exact value there is still no considerable common measure of agreement.

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[2] Public Health, January, 1931, p. 147.

[3] See THE LANCET, 1930, ii., 1248.

[4] King Edward VII. Mem. Pasteur Inst. and Med. Resear Inst., Shillong. Thirteenth Ann. Rep., 1930. Assam Gov Press. Proc. Assam Branch Brit. Med. Assoc, 1930. Pub. 1 Indian Tea Assoc., Calcutta, 1930.

Cholera is likely to be one of the infections by which bacteriophage will stand or fall. The conditions in this disease are such that the organism should be an excellent substrate for the agent, if it is really capable of reproducing in the human intestine its test-tube effects, and reports of its use are therefore very welcome. At the same time nothing short of a rigidly controlled and statistically accurate investigation can give safe grounds for final conclusions. It should not be hard to carry out, but with a disease with the vagaries of cholera rigid impersonal control is an obvious necessity. This counsel of perfection seems as far as ever from realisation, although it is demanded with an almost tiresome reiteration. The defect may be as fully apparent to the field workers as it is to us, for we note that one of the reports under review concludes with the ingenuous remark that "we may have to await the use of the bacteriophage in the Army during a campaign to obtain statistically useful data."

INTRAVENOUS MEDICATION.

THE intravenous route of introduction of drugs has of recent years made great headway and may be said in certain instances to have justified itself very fully. Such examples as quinine in malaria, the arsenicals of the salvarsan group in syphilis framboesia and relapsing fever, tartar emetic in leishmaniasis, and emetine in amoebic dysentery will very generally be accepted as outstanding successes of this method. Its advantages are twofold, in so far as it enables the physician to administer drugs which cannot be introduced adequately by the alimentary route either by reason of toxicity or lack of absorption in an unaltered state, and secondly to obtain optimum concentration and distribution of the drugs introduced. The great measure of success in protozoal diseases has naturally raised hopes that the intravenous introduction of chemical bactericides may be the ultimate solution of the difficult problem of dealing with generalised bacterial infections. Experience has shown that this problem is one of considerable complexity. In the cases instanced above, where a measure of success has been achieved, we have been dealing with organisms which have acquired a high degree of what may be called specific parasitism. They are dependent for continued existence on a favourable host, and if deprived of that environment and subjected to unfavourable influences they are comparatively easily killed. The bacteria as a group have not reached that high degree of parasitism and can more readily carry on their existence apart from any host and in spite of adverse conditions both physical and chemical.

At a joint meeting held by the Sections of Surgery and Pathology of the Royal Society of Medicine (see p. 349), the intravenous use of germicides was discussed. It will be noted that a large degree of agreement was expressed from both sections as to the failure of the intravenous injection of chemical antiseptics in cases of bacteræmia. The experimental work detailed by Prof. ALEX. FLEMING was very generally accepted as conclusive and complete as regards test-tube conditions; the clinician, however, reserves the right to question the direct applicability of test-tube experiments to vital conditions. In such questions as these we should be unwise were we to ignore guidance from experimental methods in the laboratory, where some control can be obtained of factors likely to complicate the picture. When we come to decide how far such experimental results may be directly translated to vital conditions in man great caution must be observed. It must be admitted that even where the experimental work offers but little hope of success the clinical test must be the ultimate and final one. Unfortunately the evaluation of clinical results is often itself a matter of the greatest difficulty, as it is seldom possible to obtain strictly comparable controls; nor is it possible, as may sometimes be done experimentally, to check results by what may be termed triangulation, or experiments devised to approach the same problem from a different angle. In the discussion under consideration, as has been observed, there appeared to be considerable unanimity as to the failure of germicides to benefit in septicæmic cases. Prof. FLEMING's experimental evidence would lead us to expect such failure, and it would appear that those experiments, controlled as they were by experiments demonstrating that blood in the test-tube kills off large numbers of bacteria when no antiseptics are present, may with some degree of certainty be taken as showing what may be expected to happen in the living body. The root of the problem was probably touched by Mr. T. H. C. BENIANS when he indicated that the real requirement was, not to kill the bacteria in the blood stream, as we know that the blood is itself able to deal very effectively with these up to considerable limits, but rather to deal with the source from which these bacteria are continuously (or discontinuously) reaching the blood stream. It would not appear likely that such a focus will be sterilised by any intravenous injection of chemical bactericides, but means must be sought by which the natural tissue reaction to infection may be encouraged to shut off such a focus, and further, the surgeon must be prepared to assist in its elimination by relieving pressure and by supplying drainage. The simplest example is, perhaps, in acute osteomyelitis, where before operation a growth is almost always obtainable in blood cultures, whereas a few hours after adequate opening of the focus of infection the blood stream usually will be found to be free from bacteria.

But while there is amongst surgeons and pathologists a large measure of agreement as to failure in the past, both groups retain hope that in the future intravenous medication may, in an indirect way, lead to more favourable results in these difficult cases. The striking results which are sometimes observed after the intravenous injection of hypertonic salt solution, or by the injection of substances which, for want of a better explanation, are said to produce "protein shock," give some hope that a method of increasing the tissue reaction to infection may be found. Such a method may be discovered by the experimental method, but we must also remember that it may be reached by the empirical approach. Empiricism must be prepared to prove itself against severe testing and criticism. The experimental method carries its testing and criticism with it in a large measure, but it must ultimately be judged by its applicability to clinical conditions.

ANNOTATIONS

THIS YEAR'S INFLUENZA.

THE study of the evolution of disease, foreshadowed by Sydenham, is still in its infancy, but the syndrome known as influenza suggests a promising field of investigation. The name is retained for the sake of convenience, but every general practitioner of experience admits that he is dealing with a constantly changing disease. Some day it may be possible to assess the relative evolutionary importance of climatic and social factors, and the effect of cultivation through a succession of human hosts under varying conditions; at present we are content to take influenza as we find it year by year. Dr. Ulrich Friedemann,[1] Director of the Infectious Disease Wing of the Virchow Hospital in Berlin, says that the type he has seen among hospital patients this winter is almost exclusively catarrhal, many patients suffering from infection of the sinuses with suppuration. He has not yet observed the neuritic and gastro-intestinal forms though they are apt to appear in the later stages of an epidemic, and otitis media and pneumonia are also rare. A complication seldom observed before but common this year is, he says, catarrhal and follicular angina, and a certain number of patients suffer from cholecystitis with slight jaundice. Its appearance is preceded by eight days of catarrh and takes the form of a sudden feverish attack, generally accompanied by shivering, with a rise of temperature sometimes to 104°F. The characteristic pains of trunk and legs are not much in evidence this year, but headache is common and many patients suffer from severe herpes. The catarrhal symptoms chiefly consist of nasal catarrh, laryngitis, and tracheobronchitis, and the cough is often accompanied by pain. The fever disappears in one to three days but the convalescence is slow. There seems to be little distinction of age, except a predilection for infants. In Hamburg an epidemic is just dying down; it has been of a banal type with slight bronchitis and transient cyanosis, with a very low death-rate. Dr. Friedemann remarks that the ætiology is as obscure as ever, and that he does not think that this year's influenza is ætiologically identical with its forerunners.

Dr. Karl Schoenfeldt,[2] dealing with influenza in private practice, distinguishes between "influenza" due to Pfeiffer's bacillus alone and "grippe" due to Pfeiffer's bacillus in association with streptococci. Influenza patients, he says, show a moderate rise of temperature, pains of the limbs, and often respiratory symptoms, after some days of mild malaise. There is no great disturbance of general health and they recover quickly, although they may be troubled for some time afterwards by a cough or neuralgic pains. When, however, streptococci are present, the patient feels gravely ill and suffers from excruciating muscular and joint pains. The temperature is high, and the symptoms often include shivering, vomiting, diarrhœa, malaise, and severe headache, with a copious discharge of clear fluid from the nose. The lungs are generally free from symptoms. The temperature fluctuates considerably and may return to normal after two or three days, but relapses are common. Convalescence is prolonged and the patient may complain of complete physical and nervous prostration.

As Dr. Friedemann points out, the clinic practitioner and the private practitioner see very different types of cases, and doubtless the syndromes these two authorities describe will both be recognised in this country. The description of the involvement of the sinuses, for instance, tallies with the experience of several English practitioners this winter. Nevertheless it is quite possible that the term "influenza" is used to describe two or even more ætiologically distinct syndromes, and that until these are more clearly distinguished treatment must remain largely symptomatic.

HIGH SPINAL ANALGESIA.

THE principles and practice on which success depends, when attempts are made to procure insensibility of the upper parts of the body and the head and neck by injections into the subarachnoid space, were lucidly set forth by Mr. A. Dickson Wright before the Section of Anæsthetics of the Royal Society of Medicine on Feb. 6th. Success was illustrated by the appearance of a patient, aged 70, from whom a mass of malignant cervical glands had been removed a couple of weeks previously, the only anæsthetic used being an intrathecal injection. In this instance the injection had been made at a high level of the spinal cord, but generally Mr. Wright uses the lumbar interspaces. He employs novocain and believes that height of anæsthesia and the duration thereof depend on force of injection and amount of drug injected. His practice is similar to that which Koster in America has employed successfully on a large scale. The system admits of the use of spinal injection for anæsthesia in such operations as those for mastoid disease and for removal of tonsils. Mr. Wright claims that it is at least as safe as general anæsthesia, taking a view of results as a whole and including post-operative effects. The selective action of cocaine and its allied drugs for sensory as opposed to motor nerve-fibres is a basic fact on which the method rests, and Mr. Wright stated in evidence of this fact that experimentally the entire body can be rendered insensible by endothecal injection of cocaine without any motor paralysis being produced. The phrenic nerves are protected by this selective quality of novocain. As much as 18 grammes of novocain have been injected. It is not necessary to withdraw any cerebrospinal fluid. The low blood pressure often evinced is not regarded by Mr. Wright as a danger, and he has seen the respirations fall to six per minute. When treatment for depressed circulation is necessary he believes in intravenous injection of adrenalin, and the post-operative headache which is only rarely troublesome he combats by injections of glucose or magnesium sulphate. Many speakers discussed the paper, and percaine, to which Mr. Wright had given but slight attention, was strongly advocated by Dr.

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[1] Med. Welt, Jan. 31st, 1931, p. 148.

[2] Ibid., p. 149.

Howard Jones and Mr. Kirkby Thomas. Mr. C. Donald insisted on the importance of keeping the head low as the key to safety with spinal analgesia, and found little merit in either adrenalin or ephedrine. Dr. Z. Mennell uttered warnings against cisternal puncture, referring to instances in which it had been followed by death, apart from any injection of analgesic drugs.

HARVEIAN SOCIETY'S CENTENARY.

THE Harveian Society of London is now entering on the second half of its hundredth session, at the close of which the centenary celebration will be held. This will open with an oration to be delivered on Thursday, June 11th, by Dr. Raymond Crawfurd at St. Bartholomew's Hospital when Sir Thomas Horder will preside. To this meeting delegates will be invited from all the medical societies in London and surrounding districts; after the oration an exhibition of Harvey relics will be shown. On Friday the Buckston Browne Dinner will be held at the Grocers' Hall, with H.R.H. Prince Arthur of Connaught as the principal guest. On Saturday there will be a pilgrimage to Hempstead Church, Essex, where William Harvey is buried, the leaden shell having been transferred in 1883 at the instance of the Royal College of Physicians of London from a vault to a sarcophagus in the Harvey Chapel above it. Here a short service will be conducted at 12 noon by the Bishop of Colchester. On the return journey the pilgrims are to visit Rolls Park, Chigwell, where Harvey at one time lived, the present owner, Lady Lloyd, having offered to entertain any members and friends of the Society. After tea Sir D'Arcy Power will give a short address on Harvey's connexion with Rolls Park.

THE MISCALLED TUBERCULOUS KNEE.

ONLY a generation ago the diagnosis of tuberculosis of the knee was a much easier matter than it is now. Tumor albus genus was tuberculosis; that was that, and there was very little more to say about it. And water on the knee was chronic hydrops genus—an equally facile diagnosis on which to go to sleep. At a meeting of the Norwegian Surgical Association in Oslo last November, Dr. H. Sundt,[1] medical superintendent of the coast hospital at Stavern, showed how completely the attitude of the Scandinavian medical profession has been revolutionised in this matter during the last 15 years, and how we have not only learnt to eliminate from the category of tuberculosis some 50 per cent. of the cases which would almost automatically have been thus stamped a generation ago, but also how among the diseases now known to be non-tuberculous there is a large proportion to which no diagnostic tag can yet be attached. We have changed the self-complacency of ignorance into a questioning and diffident agnosticism. The wholesale manner in which chronic complaints of the knee were bundled into the tuberculous sack is well shown in a monograph on tuberculosis of the knee, published in 1889 in Oslo by Prof. H. Strøm, whose material at the Rikshospital, collected during the 14-year period 1873–1887, consisted of 200 consecutive cases, all of which were labelled tuberculous simply on the strength of their clinical course and the naked-eye anatomical findings. During the 19 years Sundt has been in charge of the Stavern hospital (since Sept. 1st, 1911) 310 patients, suffering from some ailment of the knee, were admitted. In 205 cases tuberculosis was diagnosed. The ratio of tuberculous to non-tuberculous diseases of the knee was thus approximately as two to one. But during the last four years this ratio was further reduced to one to one, thanks to diagnostic advances in the forefront of which must be placed the exploratory arthrotomy.

Of the legitimacy of this procedure in obscure cases among adults Dr. Sundt is convinced. Even in the case of children the surgeon should not be as conservative in this matter as he was, for the exclusion of tuberculosis by an exploratory excision will save many from year-long conservative treatment for tuberculosis and from the social, economic, and mental injuries which this diagnosis inflicts. To show the part played by an exploratory arthrotomy at his hospital, Sundt has classified his material so as to group the patients admitted between Sept. 1st, 1911, and July 1st, 1919, in one lot. Only 14·7 per cent. of the patients in this first period were over the age of 15, whereas in the second period, from July 1st, 1919, to Sept. 1st, 1930, about 60 per cent. of the patients were above this age. Of the 109 patients in the first period, 83, or 76·1 per cent., were found to be tuberculous, whereas of the 201 admitted in the second period only 122, or 60·7 per cent., were found to be tuberculous. The main factor in this decline in the proportion of tuberculous cases was not, in Sundt's opinion, due to the increased proportion of adults among his patients, but to the diagnostic help given him by an exploratory arthrotomy. He performed this operation only 15 times in the first period, and in as many as 116 cases in the second period. This point is brought out even more clearly by a study of the last four years of the second period—i.e., from July 1st, 1926, to June 30th, 1930. Of the 95 patients admitted during these four years, only 48 were labelled tuberculous, the remaining 47 being considered as non-tuberculous. In as many as 61 of these 95 cases (56 adults and five children) the diagnosis was aided by an operation which in the case of all five children and in 25 of the adult cases led to the exclusion of the diagnosis of tuberculosis. Whilst the differential diagnosis was thus definitely clinched in every case operated on, it was possible to make a certain diagnosis, one way or the other, in only 10 of the 34 patients who were not operated on. Sundt speaks of the exploratory incision as a last resort; it is only because the differential diagnosis is so frequently difficult that the surgeon is driven so often to this last resort. For a tumor albus a small incision under local anæsthesia will suffice. But in the case of hydrops of the knee it may be necessary to take the risk of a complete exploratory examination of the joint.

The various other tests for tuberculosis are brought in review by Dr. Sundt and found wanting. The injection of fluid, aspirated from the knee, into guinea-pigs was undertaken in 37 cases, with positive results only in five. But among the 32 cases classed as negative by this test, there were eight in which a microscopic test (not further specified by Sundt) was carried out, and in six of these cases this test indicated tuberculosis. In two other cases the further course of the disease proved it to be tuberculous. As for the Pirquet test, Sundt quotes cases showing how even a definite focal reaction cannot be taken as irrefutable evidence of tuberculosis. Of the X rays he says that they yield no picture pathognomonic of tuberculosis of the joints. The rate of sedimentation of the erythrocytes is no specific phenomenon, nor can the complement-fixation test be relied on; in Sundt's experience it is much less reliable than the

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[1] Tidsskrift for den Norske Laegeforening, Jan. 15th, 1931.

Pirquet test. With regard to the 105 cases which he classed as non-tuberculous, Sundt admits that in as many as 55 he could arrive at a no more definite diagnosis than non-tuberculous disease. The cases to which he could attach a more definite label included 21 of syphilitic disease and 11 of arthritis deformans. There were seven cases of osteomyelitis, three of hæmophilia, two of hysteria, and one each of giant-celled chondro-sarcoma, xantho-fibro-sarcoma, and chondro-pathia patellæ. Other surgeons have succeeded in naming a higher proportion of their non-tuberculous cases by the creation of a special class for cases of what they describe as "gonitis serosa." When such cases cannot be definitely labelled as tuberculous or syphilitic, Sundt adds them to his category "gonitis incertæ causæ." Most of the cases in this category in his material would probably come under the symptomatic term of "chronic synovitis" employed by Burckhardt. Poncet's tuberculous rheumatism, without microscopic changes in the knee characteristic of tuberculosis, may also be the correct diagnosis for some of these obscure cases which at present are a challenge to surgeon and pathologist.

MARRIAGE DISQUALIFICATION IN BIRMINGHAM.

A WEEK or two ago the public health committee of Birmingham, in advertising for a medical woman for its maternity and child welfare department, made it a condition of appointment that the post would automatically terminate on marriage. This action was, it seems, taken in pursuit of a general policy of reinstating the men who had been displaced by married women during the late war. Exception was taken to the condition by the local branch of the National Council of Women as well as by the Birmingham and District Medical Women's Association, and as a result of a combined deputation to the public health department the committee rescinded its decision, thus leaving it open for women medical officers to retain their posts after marriage. A similar situation, the outcome of which is still in doubt, has arisen at the General Hospital, whose board of management decided to reappoint a married officer, who had applied for four months' leave of absence because she was expecting a baby, but in future, save in exceptional circumstances, medical women on the staff of the hospital will be asked to vacate posts on marriage. The words "exceptional circumstances" were intended to cover not only home life but also peculiar fitness for the post in question. This action on the part of the board was contested at the annual meeting of governors last year but was upheld. The resolution, however, will not become operative until the meeting of the governors next month, when it is possible that it may not be ratified, especially in view of the city council's change in policy.

EARLY REFORMERS OF ASYLUMS.

DR. H. J. Norman gave an interesting account[1] of the reformers who, at the end of the eighteenth century, introduced new methods of treatment of the insane. He spoke appreciatively of Dr. Semelaigne, a great grand nephew of Pinel, who had done so much to increase our knowledge of the events of that period. Referring to the work of Philippe Pinel (1745–1826), he outlined the famous story of the interview with Conthon at the Bicêtre, and the striking off the chains from the insane, and the subsequent reforms at the Salpêtrière. He spoke of Pinel as a simple, modest man, who had said that it was a happy allocation of circumstances which enabled him to carry through these reforms; nevertheless, his work was of supreme importance. Then came the foundation of the Retreat at York by William Tuke in 1792 and the publication of the History of the Retreat in 1812. Dr. Norman pointed out that the reform movement was sporadic and that it was not until the Lunacy Commission was established in 1845 that gross abuses were swept away. In their different ways Charlesworth, Gardiner Hill, and Conolly all contributed to this movement. It was, he said, Joseph Dacquin (1733–1815), who did away with the admittance of casual visitors who paid to see the lunatics, and wrote a book, now rare, on moral treatment. He declared that anyone who regarded the insane as a matter for amusement was a moral monster, and he denounced the practice of sacrificing good methods of treatment for economy. The first edition of Dacquin's book (1787) was dedicated to humanity, but the second edition was dedicated to Pinel, whom he regarded as "humanity personified." In the discussion which followed Dr. G. W. B. James gave some details of the routine of the patient's life at Moorcroft more than 100 years ago. They took country walks, stopping at inns for wine or beer, and smoking with churchwarden pipes. Dinner was taken at 4 P.M. and the diet was more than liberal, wine being abundant.

EPSOM COLLEGE.

THE building of the School Sanatorium at Epsom College is progressing apace, and it is likely to be completed in July. This will enable the existing sanatorium to be transformed into an additional boarding house by next September term. Room will thus be available for another 25 boarders, which will lessen by that amount at any rate the number of applications for residence as boarders that have had to be declined recently. With this addition the number of boys at the College will be 450.

POISONING BY HYDROCYANIC GAS.

Hydrocyanic acid is widely employed in commercial processes, either in the form of the acid itself or as its sodium or potassium salt. On exposure to the air—whichever form is used—hydrocyanic acid gas is given off, and it is therefore important to know at what concentration this gas becomes dangerous to human life. Owing to the rapidity with which death may follow its inhalation there are limitations on experiments upon human beings, but something has been learnt from a series of observations on animals lately made by Prof. Joseph Barcroft at the War Office Experimental Station.[1] Apart from any idiosyncrasy in the animal, it was realised that two factors would affect the toxicity of the gas: first its concentration in the atmosphere, and secondly the duration of its application. It was found that this relationship was not a simple one, for when the concentration of the poison was sufficiently low, the animal could be exposed to it indefinitely without apparent harm. It was hoped that by making enough experiments deductions might be formed which were applicable to human beings. The size of the animal was found to be no criterion of its ability to survive. With the toxin at a lethal concentration dogs died before cats, rabbits earlier than rats, and all these expired before goats and monkeys. It is difficult to understand why there should be this difference in the time factor between these various animals, but a suggestive experiment upon a cat and a rabbit is quoted. H. Taylor exposed these animals separately to atmospheres containing HCN, under such conditions that the respiratory exchange could be measured. Although the initial ventilation-rate was the same in both animals, the introduction of HCN into the air had the effect of increasing this rate in the cat, and of diminishing it in the rabbit. The net result was that although the rabbit, as it so happened, was in an atmosphere richer in HCN than that in which the cat was placed death was longer in its onset in the former than in the latter. When, however, the total amount of HCN inhaled by each animal was calculated, it was found to be the same for both. As these animals were of the same order as regards size, it may be assumed that if there were no destruction of the poison in their tissues, then the concentration of HCN would be the same in the blood of both animals when death occurred, and this concentration would be an expression of the lethal dose. The toxicity of the poison is due to its paralysing effect upon intercellular oxydases, and the respiratory centre is the earliest of the vital tissues to succumb. Canaries and pigeons are much more susceptible than rats and mice.

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[1] Royal Society of Medicine, Sections of History of Medicine and Psychiatry, Combined Meeting, Feb. 4th.

[1] Jour. Hyg., January, 1931, p. 1.

Discussing the practicability of applying the results of these experiments to man, Prof. Barcroft quotes an actual experiment where "a man" and a dog were both enclosed in an airtight chamber, the atmosphere of which contained HCN at a concentration of about 1 part in 1800. The dog became unconscious in one and a half minutes, whilst the man felt no symptoms. During the course of this experiment any movement made by the dog up to the time of unconsciousness was imitated by the man, so that increased respiration due to muscular activity would be to a comparable extent in both. The dog therefore seems to be more susceptible than man. It is known, however, that mice and canaries are more easily killed than the dog, and for this reason the mouse is sometimes used for testing the toxicity of an atmosphere. Here, however, a fallacy may arise, incidental to the manner in which the test is executed. When the observer, as is usual, carries the animal into a suspected atmosphere he is performing work, whereas the mouse may be at rest; and as a consequence its relative sensitiveness is diminished. Where the concentration of the gas is low (0·1 mg. per litre) the best indicators are birds. A man could breath this atmosphere for ten minutes without harm, whereas a canary would be dead in two minutes. Precautions must be taken by the observer, however, not to exert himself unduly. He should be breathing normally. Of the quadrupeds, the dog is the most sensitive, and as the animal would be walking alongside the observer, it would thus be performing a comparable amount of work, with its consequent effect upon the rate of breathing.

The question of treatment of poisoning by HCN inhalation is also considered. Several methods have been proposed, including artificial respiration and injection of glucose. The administration of glucose has been suggested for the treatment of poisoning by cyanide; but in these experiments it was shown that glucose has no protective action against poisoning by the inhalation of HCN. In view of the fact that the heart may go on beating for some time after respiration has ceased, the greatest hope for recovery seems to lie in artificial respiration. It must be realised that it is a race between the destruction and the dissipation of the HCN on the one hand and the permanent degradation of the machinery of the body on the other. Artificial ventilation of the lungs will assist in dissipation of the HCN; and if oxygen be used instead of air, it seems natural to assume that the destruction of the toxin will be hastened.

A DEFENCE OF MENTALISM.

THE late Prof. Rignano did not live to see his last defence of Mentalism translated into English,[1] but in the last year of his life he was able to conduct a lively controversy with the materialistic biologists. Like the best philosophers, he was too wise to reject the diverse facts of nature on the one hand, or the encroachment of mechanistic physics on the other. He has tried to bring about a compromise by positing a new type of energy which will satisfy the "vitalistic" needs of the organism without running head first against the barrier of physical science. Although he cannot see his way to abandoning Purpose and Teleology as interpretations of life, he finds that he cannot altogether put aside those laws of physics which must govern the changes in matter, whether living or otherwise. He takes refuge in the concept of the labile characteristic of all vital equilibria. Metabolism is itself "the chemistry of becoming" rather than that of static constitution. Biologists say that Rignano sees more teleology in living things than they actually possess. Those biochemists who are concerned with the peculiarities of colloidal equilibria, will not need a new principle to explain the labile states of their materials, which are so akin to living protoplasm. The Donnan equilibrium, for example, shows how very near present-day colloidal chemistry is to explaining the dynamics of life without reference to any special energic principle. Prof. Rignano made an honest attempt to save biology from the neomysticism of Bergson and Driesch, and also to save it from complete mechanisation. For that alone, and for the authors scientific approach and consideration of all levels of biological action, the work deserves the attention of all thinking biologists and physiologists.

GASTRIC SYPHILIS.

MANY authorities, including Clifford Allbutt, have held that syphilis of the alimentary tract is very rare, except perhaps in the mouth and rectum. On the other hand, most observers with special knowledge of diseases of the abdomen become aware that cancer of the stomach may be closely mimicked by syphilitic disease; indeed, it has been stated that the only chance for a patient suffering from cancer of the stomach is the possibility that the diagnosis has been at fault in this respect. Gastric syphilis has thus an occasional importance, and Dr. G. B. Eusterman's[2] observations on 93 cases at the Mayo Clinic will be read with interest. In four of them the infection was congenital, and in all but 28 the diagnosis was established before operation, chiefly by X ray examination and serological tests. The symptoms were usually of long standing and progressively severe, including as a rule pain or discomfort immediately after food and severe enough to have caused emaciation by the time the patients came under observation. Vomiting and pain were prominent, but, in contrast with cases of carcinoma, nausea and anorexia were usually either absent or little in evidence. In a small proportion of the cases the onset of symptoms was even more insidious, and the pain was so slight compared with the signs of undernutrition that the diagnosis from cancer was more difficult. In a third group ulceration was the most prominent event, and here the symptoms—relief of pain after eating and onset of pain at a period remote from meals—was such as to make diagnosis of peptic ulcer probable. Hæmorrhage was extremely rare, for the whole series yielded only five authentic instances of bleeding, and in several of these there was cirrhosis of the liver. Anæmia was also inconspicuous and was in no case marked. In gastric syphilis a palpable tumour in the abdomen is comparatively seldom found, and if carcinoma is suspected it is more because of the resemblance between gastric syphilis and linitis plastica than because of any close resemblance of syphilis to more usual types of gastric cancer. Eusterman finds that gastric analysis did not afford much assistance in the diagnosis. There was complete achlorhydria in 80 per cent. of the cases, and the stigmata were different from carcinoma in that pyloric obstruction was not usually present. Radiographic examination reveals evidence of a circumscribed or diffuse involvement of the gastric wall rather than a growth protruding into the lumen; thus, peristalsis is notably interfered with, but filling defects and pyloric obstruction are usually absent. It will be noted that none of these signs is pathognomonic, and it is the positive Wassermann reaction, probably with a history of syphilis, which really makes the diagnosis possible. The therapeutic results cannot be called more than fair; rather over a third of Eusterman's series are classified as cured, and nearly half as "much improved," but the remainder were unsatisfactory. Syphilis, gastric cancer, and gastric ulcer are all common diseases and the simultaneous occurrence of syphilis and cancer is always a possibility. But since one disease is necessarily fatal, and the other is often curable, it is worth while to examine the blood whenever gastric cancer is suspected.

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[1] The Nature of Life. By Eugenio Rignano, Professor of Philosophy, University of Milan. London: Kegan Paul and Co. International Library of Psychology, 1930. Pp. 168. 7s. 6d.

[2] Eusterman, G. B.: Jour. Amer. Med. Assoc., Jan. 17th, p. 173.

THE NEW PERIMETRY.

THE importance of perimetry is at least as great to the neurologist as to the ophthalmic surgeon. The latter is chiefly concerned with the mapping out of the visual fields in such diseases as glaucoma, retinal and choroidal affections, and the different forms of optic atrophy and retro-ocular neuritis. He is also concerned with the various forms of limitation of the field which are connected with affections of the occipital lobe and of the visual fibres in their course between the cortex and the optic chiasma; but these cases are primarily neurological. In the past it was considered enough to test the fields of vision with an ordinary mechanical perimeter such as MacHardy's, and this is still the most generally used instrument for ordinary cases. For accurate work in the central part of the field, enlargements of the blind spot and so forth, various forms of scotometer have been in use for many years. These depict the central field on a larger scale, the test object being moved by the surgeon's hand.

A work in perimetry by Mr. Traquair, which has already won for itself the place of a standard work on its subject, has now reached us in its second edition.[1] A large part of this work deals with hemianopic and quadrantic defects depending upon supranuclear and suprachiasmal affections, and is liberally illustrated by charts. Mr. Traquair lays great stress on relative defects in the visual field and compares the normal field to an island of vision surrounded by a sea of darkness, the central part of the island being elevated into a conical hill with steep sides. Any abnormal depression in any part of this hill can be demonstrated by using test objects of varying diameters, each diameter corresponding to a contour line which is normal for that size of test object but which in abnormal states may vary. In this way the new perimetry is concerned not only with qualitative defects of the field of vision but with quantitative ones. That the importance of the subject is realised appears from the comparatively short time which has elapsed since the appearance of the first edition of this work in 1927. Its value is likely to receive still further recognition.

HEALTH SERVICES IN LIMERICK.

THE Department of Local Government and Public Health, writes our Dublin correspondent, is meeting considerable difficulty in carrying out its determination to have whole-time medical officers of health appointed for the several counties and county boroughs. The latest obstacle is the corporation of the city of Limerick. The department has written to the corporation calling on them to fix a salary for a whole-time medical officer of health at a figure not less than £800 a year. It was pointed out that there was in Limerick an abnormally high infant mortality and the highest maternal mortality in the State. The department added that the terrible wastage of life could not be defended, and that there was pressing and urgent need for reorganising the public health services of the city. The attitude of some of the members of the corporation was illustrated by a remark from one of them that the duties had been admirably discharged hitherto for a salary of £175 a year. After discussion the corporation appointed a committee to discuss the public health services of the city with an inspector of the Department of Local Government and Public Health.

COMMISSIONERS OF THE BOARD OF CONTROL.

UNDER Section 11 of the Mental Treatment Act, 1930, the Board of Control, with the approval of the Minister of Health, have appointed the following to be Commissioners: Dr. A. E. Evans, Dr S. E. Gill, Dr. E. O. Lewis, Dr. J. W. W. Adamson, Surgeon Rear-Admiral J. F. Hall, and Surgeon Rear-Admiral E. T. Meagher. All these are at present medical inspectors. The Board have also appointed as Commissioners Mr. C. F. Penton, barrister-at-law, Miss I. M. C. Duncan, barrister-at-law, Surgeon Captain H. C. Devas, Dr. I. G. H. Wilson, and Miss R. Darwin (part-time).

BRITISH HOSPITAL IN PARIS.—On Thursday last week the Duke of Atholl opened the new maternity wards at the Hertford British Hospital in Paris. The new building, which will accommodate 12 patients, includes an isolation room and a nursery. Last year 100 babies were born in the hospital, which now provides for the needs of English residents not only in Paris, where they number 30,000, but of almost all the north and north-west of France.

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[1] An Introduction to Clinical Perimetry. Second edition. By H. M. Traquair, M.D., F.R.C.S. Edin., Ophthalmic Surgeon, Royal Infirmary, Edinburgh. London: Henry Kimpton. 1931. Pp. 281. 30s.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

VII.—LOVE: THE RÔLE OF THE MOTHER.

MOTHER IMAGO.

THE preceding lecture dealt with the idea of father imago" and the importance of the feelings, tionalised opinions and projection images derived om it. It is now necessary to consider the closely lated conception of "mother imago." Although r the sake of convenience father imago and mother ago have been divided, it will be seen that they e in fact mutually interdependent, the feelings out the one being closely associated with complientary feelings with regard to the other.

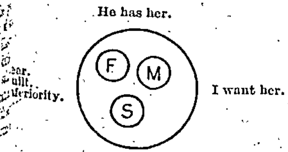
The origin of mother imago is the same as that of ther imago. It is an inborn feeling pattern with gard to the mother-figure, derived from past racial perience. In the same way that father imago more than father, so mother imago is more than other. The feelings are present originally as an born *potentiality* and become modified by experience mother, mother-surrogate, and mother-similars. e shall again confine our attention during this apter to the imago reactions of the male for reasons convenience and simplicity.

The inborn primary affect of the son for the mother "I want her, I want her to love me." The way in which this love and longing for the mother clashes with feelings associated with the father imago—namely, those of inferiority, guilt, and fear of punishment, was discussed in the previous lecture. The roblem then is the following: "How is it going to e possible for me to possess my mother for myself ithout conflict with father imago?" It is ggested that the answer to this fundamental roblem is provided by a very large number of ychological disorders. In general it may be solved one of the following ways:—

(A) Normal emotional development.
(B) Fixation compromise.
(C) Total repression.
(D) Messianic compensation.

FIG. 1.

"Feelings about" Mother Imago:—



Encircled letters = F, feeling about father; M, feeling about mother; S, feeling about self.

(A) NORMAL EMOTIONAL DEVELOPMENT.

This has already been dealt with in Lecture V., in hich was pointed out the way modification of he mother-figure occurs through a series of associated milars, such as nurse, aunt, sister, cousin, and other-substitutes.

We are now able to realise something of that ormal but often chaotic process of *falling in love.* Love does not begin with adolescence, nor with the first girl after that period to whom we lose our hearts. Love begins with the mother and all love thereafter is a modification of love for the mother. It is obvious what a complete change there must be, since the sexual component must be *kept absent* with regard to the mother, but must be *dominant* with regard to the mate. This psychological development must occur before a man can be physiologically potent.

At puberty the physiological development of the gonads introduces a more or less sudden factor of sexual dominance. The main continuity of development, however, is still in the line of transferred affect, from individual to individual, of the mother-mate series. It is as if there were in the beginning a sensitised plate containing certain hidden potentialities, the detail of which has been brought out, little by little, by successive experiences of loved ones. The earliest and therefore deepest impression results from experience of the mother. But this gradually becomes modified by successive experiences of mother-substitutes. The love image carried within the individual is in the first place the primary object of his love, and the external loved one is no more than an external reference or reflection of this inward image.

When a person falls in love he has found the external reality who appears to correspond more or less with his internal love image. It is as if he has superimposed his love image upon someone, but she may in fact be quite different from it. If the love image is still emotionally immature, it will contain much of the mother-figure, and the loved one will in all probability be older and more experienced than himself ("calf-love"). In this case there is very likely to be an absence, due to repression, of the sexual factor, because of the fundamental importance of dissociating sex from the mother-figure. If the girl is his own age or a little younger, further modification and growth has taken place and the sexual element is likely to be more dominant. The crisis and chaos of falling in love is due to the conflict of the new experience with the old, the difference between love for the mate with all its sexual dominance, and love for the mother with its inevitable sexual repression.

One of three things may occur. It must be remembered that the individual has not fallen in love so far with any real person, but only with his own love image. He may therefore try to modify the external person to correspond with the details of his love image. This is liable to be disastrous, because the girl only feels that she is being criticised and, worst of all, that she is being criticised in favour of her mother-in-law to be, whom she unconsciously and quite truly feels to be her rival. Even a slight hint of criticism may cause a violent reaction, such as the suggestion, "My mother would not like it if . . ." or "The way my mother cooked was different." The man may be so devoted to his mother love-image that he cannot tolerate the reality of his loved one, whereas she cannot tolerate the comparison with her mother-in-law. This situation, whether it occurs before or after marriage, spells failure.

The second possibility is that the man will, after a little experience of his loved one, find that after all he has made a mistake, because she is not the person that he thought she was. It is as if the projected love image is no longer applied to her and she is now herself, unloved instead of invested with the love-image. He is no longer in love with her and wonders, in all probability, why he ever thought he was.

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* A course of 12 lectures delivered under the auspices of the avistock Clinic, Tavistock-square, by Dr. E. Graham Howe uring the autumn session of 1930. Earlier lectures of the eries have appeared weekly in THE LANCET since Jan. 3rd.

The third alternative is the only one which can lead to mutual happiness. In the beginning, when he first falls in love, the man is in love with his love image rather than with the girl upon whom he has attached it. A modification takes place of the image towards reality, until it finally coincides with the real personality of the loved one. Love image and loved one are now one and the same, and if this has at the same time taken place with regard to the girl's love image for him, they can be said to be at last truly in love with each other. But it must be realised that this is, as a general rule, a matter of prolonged experience and emotional development on both sides. Many people are inclined to think that when they fall in love they have at last achieved a long looked-for end. But this is not true, they are so far only at the beginning, because so much mutual modification and growth remains to be done. It is a very easy thing to fall in love. It is much more difficult to be in love with the real truth of the loved one. If lovers realised that falling in love was the beginning, love would not end so soon as it often does.

(B) FIXATION COMPROMISE.

The second method of obtaining fulfilment of the wish to love and be loved by the loved one is called *fixation compromise*. It is partly a fixation and partly a compromise: "I want my mother, but it must be without guilt or fear." Can this be done? If so, it is quite certain that a great many will succeed in doing it. The simplest way in which it can be done is by *idealisation* of the mother, the sexual component in her womanhood being entirely eliminated, because it is the primary source of both guilt and fear. She must be perfect, pure, virginal, immaculate, and she must be mine, without any suggestion of rivalry or competition for her love. Also, in order to complete the picture of wish-fulfilment, she must love me as I wish to be loved.

This idealisation of the mother-figure takes place as a modification in phantasy of the mother imago, which then becomes attached to some suitable external objective, real or imaginary, which is loved with the deepest—but quite asexual—emotional regard.

It is interesting, therefore, to note that the Virgin Mary figure, who so fully satisfies all these requirements, is not peculiar to the Christian religion. In many others the Virgin Birth and the idealised and de-sexualised mother-figure is introduced. It is as if, the world over, the same wish-feeling in men has striven unconsciously to possess for themselves the mother-figure without guilt. The immaculate Virgin conceives without human impregnation and the father is thereby eliminated, at the same time that the sexual factor with its association of guilt is also spared. The Virgin Mary is the idealised and de-sexualised mother, with the deepest unconscious emotional appeal. The maternal aspect of religion seems to be an essential factor. It is as if, although father imago is the main source from which the conception of God is derived, the mother imago is an essential component also of the divinity, as a corrective to that stern and patriarchal figure.

It is possible, however, to carry this process of idealisation and de-sexualisation of the desired mother-figure ye[illegible] a stage further in the escape from fear and guilt. [illegible] can be more than *de-sexualised*, she can be *de-mat*[illegible]*ised*, and thus placed altogether beyond physical [illegible]gh[illegible] and feeling. Is there any evidence that such [illegible]ess has been at least partly responsible for the unconscious formulation of our ideas of God? There are certain facts of clinical psychopathology which suggest that there is this unconscious motive in the conception of the Holy Ghost, which was referred to in mediæval literature as "she" and "the mother."

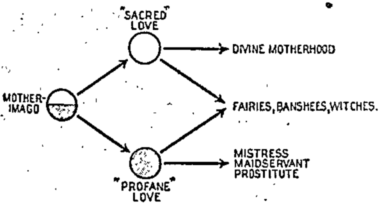
It is a matter of frequent experience that patients possessed of an intense feeling of guilt, as in melancholia, often say that they have committed the sin against the Holy Ghost, the "unpardonable sin." The evidence which they are able to adduce may seem very small to us, being frequently associated with nothing more uncommon than masturbation. But it sometimes happens that boys for whom masturbation is a "secret vice," and who have only heard a passing reference in church to the "unpardonable sin," will feel that they are utterly condemned because they have committed it. The unconscious mechanisms of psychology are not interested in modern religious criticism, but they strike deep through the superficial form to the underlying origins of religious belief, where the doctor, who wishes to understand his patients' disorders, must be prepared to follow, even at the expense of a strain upon his own prejudices. We must accept all our patients' "lunatic" statements as being *perfectly true for themselves and under their circumstances*, which is *not at all to say that they need to be true for us*. But we cannot convince them of what we wish until we first know *why* they believe what they do. If we approach the statements analytically, which is easy enough, and without personal prejudice, which is very difficult, we can find the key to all that seems so illogical and unreasonable. The only difficulty which finally needs to be overcome for our complete understanding of it is the *extreme simplicity* of the material with which we are dealing. *Psychopathology is only difficult to understand because of its extreme simplicity.*

It is suggested therefore that the "sin against the Holy Ghost" is derived from the guilt of the original incest motive, and is closely linked with what has already been said of the psychology of masturbation with its associated mother-fixation. Although the concepts of the Virgin Mother and the Holy Ghost have been developed as a means of escape from the guilt feeling, while at the same time fulfilling the wish for the mother, it is plain that the device is far from being always successful.

SACRED AND PROFANE LOVE.

In the same way that the father imago was split into "good" and "evil" types, mother imago is also split into "good" and "evil." The Virgin Mother, idealised and de-sexualised, is the type of what is spoken of as "sacred love," in opposition to "profane love." *Sacred and profane love represent the two derivatives of split mother imago* (Fig. 2). Sacred love, in itself an escape from the burden of guilt, is also an escape from the biological sexual factor, which still remains, urgent and obsessive, to be accounted for and satisfied. This can only be achieved by what is left after the idealised part has been removed. What remains still clamouring to be satisfied is a crude, physical, and sexual factor, without the check of virtue and the ideal. The loved object tends to be both despised and degraded, and to conform to the prostitute type. Very frequently it is found that the only son, or the mother-fixed son, is strongly addicted to masturbation, and later to attraction by women of the lower classes. He is filling in a supplementary detail of his love for his mother by a *dissociation*. On the one hand is sacred love, of which the idealised mother-figure remains the object; on the other, profane, attraction being felt towards a woman of a lower class and crudely sexual type. The servant girl, also, possesses an added attraction to those with dissociated mother imago feelings, owing to the fact that she is inferior and may be both possessed and despised. The cause for her being despised is the craving on the part of the man for *superiority* comparable to that with which father imago is endowed. He must feel superior, and in order to feel superior in his possession of the woman he chooses an inferior woman as his sexually desired object. Further, there is also the need to evade responsibility as far as possible. Mother fixation psychology is a *dependent* psychology, immature and lacking in self-reliance. Mother fixation evades responsibility and finds satisfaction where most can be obtained and least given.

FIG. 2.—*The Split Mother Imago.*



It is important to realise the extent to which the usual idea of immorality coincides, although for different reasons, with psychological values. In general, psychology agrees with the more or less unreasoned judgment of conventional moral standards, and does not condone that complete freedom from sexual restraint, which is frequently claimed for it by enthusiastic but usually amateur supporters.

There are female figures also created by the imagination, like the giants and ogres derived from father imago. These are the fairies, furies, witches, and banshees of fairy-tale and mythology, sometimes good, sometimes evil, and loved or feared accordingly.

It is not the purpose of this lecture to present a psychological criticism of religion, but the subject is of great importance in psychopathology, and so much has already been said about the conception of God derived from father imago and mother imago that it might be useful at this point to say a little more. The mother element cannot be left out of religion. If she is not projected into the Virgin Mary, she is present in the Holy Ghost. But this figure is too vague to give much emotional satisfaction. The mother-figure then tends to be applied to and confused with father imago, giving rise to a sentimentalised version of the Deity, with a strong maternal and feminine component. The mother-element is again very liable to be introduced into the third member of the Trinity—namely, the figure of Jesus Christ. Primarily, as of subjective psychological importance, He is the compensatory figure for personal guilt. He is the perfect man, guilt-free and sex-free, and the mediator between guilty man and the omnipotent punitive father. However, again the mother imago affects tend to confuse the Christ figure, introducing a quality of effeminacy and sentimentality into his character, which is essentially foreign to it.

All that has been said is not intended to refer in the slightest degree to matters of objective, historical validity, but only to the *unconscious factors* of the subjective psychological approach to what may have its own objective validity. To say that father imago and mother imago are factors in our conception of the Deity is merely to state a platitude—namely, that our feelings about God do not correspond necessarily with the objective truth of His reality. What *we feel* about God is a psychological matter due to psychological factors. The *objective validity* of God is altogether a different matter, but it would seem to be essential to know first of all why we feel as we do about God, before we try to discover what objective validity there may be. Unless we can do so we look not at objective reality, but into a mirror in which we shall see only the reflection of ourselves, our feelings, and our wishes. To look in this mirror and to interpret what we see is the function of psychology, but all that can definitely be said is that what we see there is probably not God.

(C) REPRESSION.

The third method of dealing with the problem of obtaining the desired loved object, without the conflict engendered by guilt, is that of *emotional repression.* Repression is obtained by one of two mechanisms; either a complete negativism in which feelings are repressed altogether, or by a defensive over-compensation in which the character of the original affect is replaced by the opposite. In the first case the statement, "I love my mother" is replaced by the statement, "I have no feelings whatever." Frigidity and freedom from the dangerous course of love solves the problem of guilt, if it does not provide fulfilment of desire. It is a state of negativism, of nothingness, but as a rule wish-fulfilment seeks its goal through some other channel. Negativism simply has no use for women, but, as in the case of the normal adolescent phase of homosexuality, wish-fulfilment finds its way by some other means to the original goal, after it has undergone certain necessary modification and disguise.

Pseudo-intellectualism frequently accompanies emotional negativism, as being the source through which wish-fulfilment can be at least partly obtained. Such false intellectualism maintains *distance* and *safety.* Women are approached on a "high-brow" or intellectual plane and contact is distantly through speech. It is probable that much that has been written and much that has been said would never have seen the light of day had there not been emotional repression behind it. Talkative people are not usually psychologically stable. People who feel keenly and behave actively in tune with their feelings have not, as a rule, got much to talk about. The high-brow is typically neither creative nor emotional. He is rather a fraud, who finds safety from the fire of feeling in the smoke of words. In his psychopathology he is fleeing from fear, guilt, and inferiority, posing as superior because he is afraid to be what he is.

Negativism alone is not usually sufficient to preserve emotional repression. Perhaps the safest of all methods of escaping from guilt is by means of *reversing* the affect from love to hate. This is a simple unconscious mechanism which is the origin of the phrase: "Hell knoweth no fury like a woman scorned." To love and to be scorned is intolerable, and only by a transposition to the reversed affect of hate can the situation be stabilised. Similarly, to love without any possibility of love being requited without intolerable guilt is impossible, and the situation can only be stabilised by the introduction of a reversed affect. "I love my mother" therefore becomes "I hate her." It is a sign of a repressed mother fixation, which makes it so difficult for a patient to realise what his true underlying feelings are, when he says: "I cannot bear my mother to kiss me. I never kiss her good-night. I do not even like to touch her. I hate all women." Such a misogynist is suffering from repressed mother fixation. He hates all women because he loves his mother, and therefore he must hate her too. It is possible that in some earlier emotional experience he was jilted with intolerable suffering to himself. His hatred of women is again defensive, but it provides security at the expense of frustrated wish-fulfilment, and he must remain an embittered and disappointed man. Emotional repression is always the cause of subjective embitterment. The acidulated spinster is more than frustrated and disappointed, she is also retaliating against life for having robbed her of the gratification of her greatest wish.

(D) MESSIANIC COMPENSATION.

A feeling of guilt is intolerable and requires unconscious and mechanical relief. "If I feel very bad, what I need is to feel very good—to feel not only very good, but the best of all possible." This is again an example of a reversed affect in which primary black becomes secondary white. The psychology of the *prig* is that of "Messianic compensation" for an underlying feeling of guilt. He is a person who never does anything wrong, but is always seeing wrong in others. In two ways he evades his own intolerable guilt feeling—by looking white himself, and seeing only black in others.

Priggishness shows itself sometimes as one of the signs of adolescent "green-sickness." Adolescence is the period at which there is a normal increase of sexual feeling and therefore a normal increase in guilt feeling. It is therefore the time at which priggishness is most liable to be needed psychologically as an evasion of guilt. Adolescence is a time of vivid imagination and great ambition, seeking enemies to slay and new fields to conquer. It is a time when knights pursue the vision of the Holy Grail and seek opportunity for the rescue of fair and embarrassed ladies, but it is also a time of guilt and green-sickness, of priggishness and conceit. The adolescent knight is often more interested in the gorgeousness of his armour and the purity of his motive, than in the distant goal of the Holy Grail and the imperilled lady. It is therefore perhaps unfortunate that this should be the time that is usually chosen for seizing upon a boy's religious enthusiasm, which is too often mixed with unconscious motives, with a view to confirmation. The safest motto for adolescence is "It is better to *become* good than to *be* good." Confirmation at this phase of rapid growth and emotional instability will too often lead to undesirable repressions, or to a later regret and refusal of religious experience.

The Wrong Kind of Mother.

The three cardinal psychological errors are fear, guilt, and inferiority, and the wrong kind of mother is she who stimulates any one of these. It is the fault of the father chiefly to stimulate the last, although there are mothers who succeed in doing so. The easiest fault for the mother to exaggerate is *fear*. She loves the child so much that she tries to protect him and make life always easy and happy. There are mothers who with the best possible conscious motives say: "I only want my children to be happy." The child cries and is comforted or given what he wants. He is told by an adoring parent that he is the most wonderful child that ever lived. But however sure the fond mother may be to the contrary, the motive is not unselfish, being due to undifferentiated ego. "My child is me. I praise my child, I praise myself." Such an attitude, however well-intentioned, is pregnant with disaster for the child.

Many mothers are over-disposed towards cotton-wool and sentimentalising. Their zeal for protection is obsessed with fear of all the multiplicity of life's dangers. Of all life's dangers probably the greatest is cotton-wool. The chest which is kept padded by cotton-wool against fresh air is most liable to be attacked by the first virulent germ which comes in contact with its over-sensitised mucous membrane. The individual who is kept padded with cotton-wool falls the easiest victim to every danger and difficult circumstance. The mother who is afraid herself encourages fear in her children, and where fear is love cannot thrive, nor progress make its way.

All mothers want their children to be good. This is largely a matter of domestic economics and comfort, but it is very easy to expect children to be too good. Again the danger is of causing repression and making prigs of them. The mother is often the last person suited to deal with the child's deepest moral problems, because she is already the cause and centre of his deepest guilt feelings. Only if the child is free from guilt can he be expected to be emotionally coöperative with his mother, and only if he is free from fear can he be the same with regard to his father.

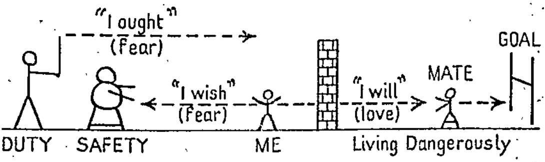
Motherhood is too often the source of unnecessary disappointment and tragedy. Conscious intentions may be so good, and yet the psychological consequences may be so dangerous, owing to ignorance of the elementary psychology of unconscious motives. Mothers must learn to regard their function as limited, their opportunities as fleeting, and their task truly unselfish, and its own reward. It is no use trying to prevent the child from growing beyond their care. It is no use trying to protect the child from his own urge towards living more abundantly. It is no use to sacrifice the present and the future for a sentimental attachment to past joys. At the right time there is much that the mother can do, but when that time is past, it is best left alone, rather than attempts made to live the past again.

A patient of 18, whose history clearly showed him to be in danger of developing dementia præcox, was prevented from entering a nursing home for early treatment because his mother wrote saying that she felt she loved him and knew him so much better than anyone else, and she felt sure that she could better take care of him!

The Right Kind of Mother.

The right kind of mother is a means to an end and a point of departure rather than a point of arrival. She is not possessive, but realises her children are not more for her than a temporary loan. She is not afraid of life, but realises that where caution is a virtue, fear is only a vice. Life must be lived dangerously, and although danger requires no seeking, when it is inevitable the safest thing to do is not to shirk it but to face it wisely. She does not expect her children to be perfect and would rather see them strong and happy, even if there were at times room for improvement in their cleanliness, manners, and clothes. She realises that goodness is more a matter of the inward spirit than the outward form, and the inward wish than the external condition. She likes to see her children as they are, rather than as they ought to be, and is content to see them grow according to their own spontaneous individuality, rather than according to her own maternal prejudice. She does not want them to be the best, nor expect them to be the worst, amongst their fellows. She does not use criticism or praise unduly, but each as it is due. She recognises her children as separate individuals, sometimes asking for her help, sometimes rejecting it; sometimes succeeding, sometimes failing, but always growing according to the way of their own urge. She holds no apron-strings, but shares her experience and wisdom when it is sought for and is content to be a lifelong comrade. Her greatest task is to regard her function as limited and herself as no more than a means to an end. The end is the mate to whom she must surrender first place, with the reward that in doing so the number of her children and the source of her happiness will be doubled.

FIG. 3.—"*Highly Strung.*"



"I ought" and "I wish to go back to my mother" are always in conflict. Each one activates the other's opposition. Only "I will go on in my own way" is single and free from conflict.

This diagram has been found useful to illustrate these points, both to individual patients and in lectures. It is intended to show the three forces which motivate us all: the will to go on, the wish to go back, and the fear of authority.

The above picture may be told as a dream story:—

"It was raining and dark. I was standing out on a road, and in front of me there was a high brick wall with spikes on the top. Behind me was my mother with her arms outstretched, and she seemed to be drawing me towards her. Behind her was my father, looking very fierce, with a stick upraised in his hand. I knew that the other side of the wall was a very beautiful girl, and her arms were stretched towards me also, but I felt afraid to climb it because it was too high. Beyond her, in the distance, was what I knew to be my goal, and there the sun was shining.

"I went a few steps towards my mother, but it became darker, and the face of my father was more threatening as he made gestures with the upraised stick. Then I turned to climb the wall and my fear seemed to leave me. As I approached it the sky became lighter and the wall less high. I managed to scale it and dropped the other side, where the girl met me and we walked on up the road together."

ILLUSTRATIVE CASES.

CASE Q.—Male; unmarried; aged 33; grocer's manager.

Complained of: Insomnia, depression, thoughts of suicide. Everything too much trouble. Terrible headaches. Impulse to throw himself under passing traffic. A few days previously he had disappeared for 48 hours and had been found at Southend.

Duration of Symptoms: About two years.

Family History: He had one elder brother, two younger brothers, two younger sisters. Father living. Mother had died two years previously.

History: The beginning of his symptoms followed his mother's death. At that time he had been the eldest son at home. He stated that his mother had refused to have anybody but him to nurse her, which he had done for six months before her death. He said that his mother could not stand her husband near her whilst she was ill. The patient stated, however, that he got on well with his father. Masturbation had commenced at 15 and continued up to date. He had read that it would cause all kinds of physical disorders and possibly insanity. He said that he had never, at any time, taken any interest in girls, but that his mother was his greatest pal, to whom he took all his troubles and in whom he could always confide. He felt that no one could ever replace her. Since his mother's death he had felt that he had no one with whom to share his worries. He had been asked to take over the management of the business, but he had felt that it was too much for him without his mother's support and encouragement. He could have managed it, he said, without any difficulty had he had his mother to help him. He had at one time spent a holiday with his mother at Southend. On his way to business one morning he felt an irresistible impulse to return there, which he accordingly did. He stated that he had the clearest visions of his mother. "I could see her as if she were coming towards me, as plain as you are." He felt that he was rejoining his mother at Southend and his intention was to commit suicide. He did not do so, however, but wandered about until he was discovered and taken home.

In the course of several interviews the patient talked a good deal about his mother, and it was explained to him that he needed to face the fact of his mother's death and to realise how excessively he had been dependent upon her. After a fortnight he said that he was feeling much better, that his sleep was returning, and that he had not been so depressed. He said, "I did not even go to see my mother's grave last week." After another fortnight he was able to return to work and stated that he was feeling normal. After that he did not return for further treatment.

CASE R.—Male; married; age 50; bank clerk.

Complained of: Sudden suicidal impulse in which he had made an abortive attempt at cutting his throat during a period of temporary depression.

Family History: His father had died of delirium tremens when he was 3 months old. He was the youngest child, with six sisters older than himself and no brothers. His mother had been left very poorly off and had had to work very hard, which caused her to become embittered. He said that he could never remember his mother kissing him or giving him a kind word, but his sisters had been inclined to spoil him.

History: He had married a woman 12 years older than himself, who was well-meaning but rather hard and authoritative. She always knew what her husband ought to do and expected him to do it, and had never discovered the difference between "taking a horse to the water" and "making him drink." She just expected him to do so, and if he did not, her feelings were compounded of self-pity and well-justified criticism. There were no children as the wife had had an operation for ovariectomy early in her married life. His sexual life had been uneventful, except that he had found himself liable to be unduly attracted by any girl who was a little extra nice to him. There had been a small affair with a typist at the bank, whom he had on one occasion taken to the pictures. His wife got to hear of it and had been filled with righteous indignation. It was not so much that his peccadillo was often referred to, as indeed it frequently was, but that he felt that it was always there between himself and his wife, and he was filled with remorse. To refer to it was his wife's strongest card, which she sometimes played with great effect. It was his Sword of Damocles.

He was over-conscientious and was in the habit of worrying unduly about his work. For the past year before the suicidal impulse, he had been working under a manager at the bank whom he did not like, and this had caused constant irritation and anxiety. He was in the habit of bringing his worries home with him and discussing them, over and over, with his wife. On the evening of the suicidal impulse he had wanted to talk about his troubles, but his wife had refused to allow him to do so, and he had felt her to be hard and unsympathetic. She had suggested that his worries were really due to some moral failure which was on his conscience, and in a moment of desperation he had said, "Yes, I have lied to you. I have always lied to you. I am lying now, and I shall always lie to you." He was, in fact, a most truthful and most conscientious man, and this was only a desperate, hysterical, rhetorical gesture. His wife was horrified but coldly superior, and told him that she was ashamed of him, and if he felt like that he had better go to bed, when she would make him a cup of tea. He went into the bathroom and locked himself in. A few minutes later he was found in a dazed semi-conscious condition, bleeding profusely from a wound in the throat where he had cut himself with a razor.

A month after the event he came for treatment. There were no signs of depression and it appeared to be clearly a case of hysterical fugue due to an impulse of the moment, caused by a feeling of frustrated love hunger. He said that he had always felt that he had wanted someone to take his mother's place. His wife, he said, had always been a very perfect wife to him—although he quite wrongly felt that at times she did not give him the sympathy and affection which he required. (Under different circumstances his wife might have been adequate, but she was not adequate for him.)

CASE 8.—Male; divorced; age 41; an ex-garage proprietor who had been out of work owing to his illness for about five years.

Complained of: Intense suicidal feelings. A desire to murder people and smash things. Feelings of horror with regard to sex. Terrible pains in the head and feelings of impending disaster.

Family History: The patient's father had been an alcoholic, and had died when he was 15. His mother had been a woman of loose morals. He was the youngest son with three brothers and a sister. One of his brothers had had a severe nervous breakdown, but had recovered after two years.

Physical Signs: No signs of physical disorder. Reflexes all very much exaggerated. Wassermann negative.

History: About the age of 9 he described how he had had a fight with his father, who had come home drunk and tried to assault his mother, abusing her and flinging things about. He had struggled with his father, and said it was touch and go as to who won. He said that at the time he hated his father with a furious hatred, and vowed, "You won't beat me." He always felt afraid of his father and an intense resentment towards him. He sometimes felt that he would like to murder him.

His childhood evinced abnormal sexual curiosity, with many experiences of a sexual nature with domestic servants, &c. His first experience of sexual intercourse was with a housemaid at the age of 15, when he was impotent. He had always regarded sex with a combination of lust and horror. Masturbation was very frequent from 15 to 21. He was typically an extravert and an exhibitionist, and his sexual experiences always tended to involve self-display. They were always regarded afterwards, however, with extreme self-reproach and emotional conflict.

At the age of 15, when his father died, he stated that for some months his mother took him into her bed. He had intense sexual feelings with regard to his mother and would try to touch her secretly whilst she was asleep. He said, "I had excited, weird feelings that she might slightly awaken and accept these advances in some way, because my father was dead." At the same time, he had an intense feeling of disgust and impropriety. He had suspicions, at the time, of his mother's infidelity. His mother would have parties in the house at which a good deal was drunk, and he suspected that immorality was taking place. He felt that he wished to spy on her, but he then got the idea of conniving at his mother's infidelity and protecting her. When he did this he said that although he felt that it could not possibly be true, at the same time he got intense sexual excitement from believing that it was true. At this age he had a nervous breakdown which lasted for some months, in which he was intensely afraid of everything.

At the age of 17 there was a very typical sexual experience in which he spent the night with a girl in a car in a garage. He attempted intercourse but was impotent. In the morning when his mother wished to know where he had been, he told her that a girl had tried to seduce him, but that he had spent the night in praying with her that she might be converted from her evil ways.

With regard to sex, he stated that he felt that all women should be like the Virgin Mary, and that one ought not to have any feelings of a sexual nature with regard to them. He felt, however, that it was himself who was the cause of their falling into sin, and yet that he wished to destroy their purity. He said, "I believe the devil is in me. I am a devil. I am sexually a wreck and a criminal. I always feel I want to let women down." At other times he said he felt like Christ, and that he wanted women to wash his feet. On the other hand, women of the prostitute class had a special fascination for him, and he said, "I was always wanting to save women on the streets. I had an intense horror of prostitutes, and they had a sexual fascination for me, but I always felt I wanted to make them into good women." After any sexual experience, at which he was usually impotent, he said that he felt, "Now that I have done that, I am finished and done for."

On one occasion, he said that he spoke to an old woman of about 60 of the poorest class, whom he met in the street. At the same time he felt absolutely terrified, and ran away from her in a panic, but could not forget the experience. He was for some time on the professional stage and had great natural ability as an actor.

At the age of 25, he married a girl whom he knew to be immoral. He was at first impotent, although he had in fact previously had successful coitus with her, but even in marriage his sexual feeling was associated with a most intense guilt. Very early in their married life quarrels developed and they led what he described as "a cat and dog life." He was sure that she was unfaithful to him, but he found that he got more excitement from feeling that she was unfaithful than from anything else. When he was in bed with her he imagined that it was not him but someone else, and that she was a prostitute, because in that way he got greater sexual excitement. He found himself again conniving at his wife's unfaithfulness, in the same way that he had connived at his mother's. It was as if sex meant guilt, and that, without guilt, sex possessed no attraction. They had one child, who was a constant source of quarrelling, and after about ten years he finally divorced his wife for infidelity.

His nervous breakdown had lasted for about five years. During that time, as he had no money of his own and his relatives disowned him, he had been taken pity on by a woman who ran a nursing home, where she allowed him to live. She was some 20 years older than himself, and his feelings were that he hated her and wished to murder her. He felt that her intentions were immoral towards him, although, in fact, it was only out of the kindness of her heart that she had taken pity on him. He felt that she was an immoral woman who was keeping him, and from this he got both torture and satisfaction. He could not bear to see two people in love without feeling a wish to murder them. He could not see a girl's leg as she walked down the street without an intense conflict being aroused. Anything that was beautiful he felt an irresistible impulse to break, and all the time he felt that he was the very incarnation of wickedness, outcast and condemned. He fell in love again, but the girl was for him completely idealised and unreal. She was at times the source of most intense conflict, because although he had idealised her, he sometimes felt she was no better than a prostitute.

Course: When he came under analytical treatment he had been ill for five years and was getting progressively worse. Analysis took the form of history-taking and catharsis, with most intense emotional abreactions, but had to be frequently abandoned. It was decided that the environment in which he lived was maintaining his emotional conflict, and he was therefore transferred to a hospital where after some months, during which he was in the care of the hospital physician, he fulfilled his oft-repeated threat and committed suicide.

Suicide.

The above three cases were chosen from among many as illustrative of the problems relating to the mother, sex and women. It is, however, significant that in each one of the three there was a strong suicidal impulse, one of which was nearly successful, one only abortive, and one quite successful. In their reports of cases of suicide, coroners do not perhaps tell all that they know, nor do they know all. Suicide must be included amongst examples of purposive behaviour, but the purpose is not always conscious. Viewed superficially, suicide may be said to be due to depression, or to a wish to escape from insuperable difficulties. But we may ask what is the cause of the depression and if the escape is made, may it not also be an escape towards a desired goal?

If we consider these deeper motives, we may divide them into three:

1. Self-punishment.
2. Self-deprivation.
3. Regression.

Self-punishment is the unconscious motive introduced by a feeling of guilt. Self-deprivation, the final act of which is the taking of one's own life, is often associated with such gestures of castration symbolism. But finally there is death as the desired goal and haven of peace, rest and freedom from pain and responsibility. Suicide is a flight from reality, but it is also the great return towards the all-embracing arms of maternal oblivion. It is suggested, therefore, that there is a very deep and intimate connexion between suicide and certain extreme degrees of mother fixation.

SPECIAL ARTICLES

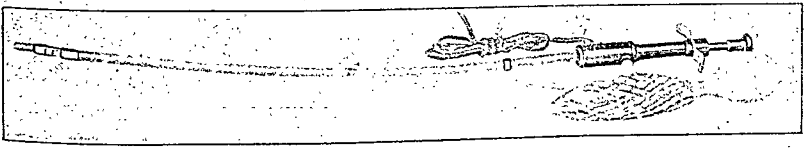
PHOTOGRAPHY OF THE STOMACH WALL.

AN INGENIOUS APPARATUS.

IN 1929 Herr F. G. Back, an engineer, working in Prof. Wenckebach's clinic in Vienna, with Prof. Otto Porges and Dr. J. Heilpern, devised an apparatus designed to take photographs of the stomach wall in the living subject. This apparatus has since been used with success by various observers in Europe and America [1] [2] [3] [4] [5] and has been put on the market by an American firm under the name of the Gastro-photor.

The apparatus consists essentially of (1) two miniature stereoscopic cameras attached to the distal end of a rubber tube like a stomach-tube, and (2) a transformer. No lenses are used, but miniature pinholes ensure that the cameras are properly focused under all conditions and that distortion is avoided. Each camera has four little films, each ¼″ wide by ¼″ long, placed behind four pairs of pinholes in such a way that with each exposure eight pairs of stereoscopic photographs of the interior of the stomach are obtained. The tube to which the cameras are fixed is of a semi-rigid type, therefore no significant torsion occurs during insertion, which must be achieved without using any lubricant, such as glycerin, which might obscure the glass cylinder round the camera. The shutters of the cameras are two sliding rings. No parts protrude so that no harm can be done to the patient when the camera is being operated. The absence of torsion while the tube is being inserted is important because each of the films is marked for insertion according to its position (posterior, lateral, or anterior). It is thus possible to locate the section of the stomach wall that is recorded on each picture. Approximately 75 per cent. of the stomach wall can be photographed.

FIG. 1.



The gastro-photo; which consists of a rubber tube to which two telescopic cameras are attached. The tube is connected with a transformer which enables it to be used with any electric current.

The light consists of a special filament lamp five-sixteenths of an inch in diameter which is arranged between the cameras. This lamp produces an instantaneous blue light of 12,000 candle power in 1/120th of a second, and the exposure is so brief that even the most rapid peristaltic movements do not spoil the photo. The filament is burned out at each exposure. The lamp does not become hot. The only lubricant used is a special paste of white wax and lanolin equal parts, which is applied to the joints in order to prevent any gastric juice from entering the cameras and possibly damaging the films. The telescopic cameras are operated by means of a press button on the handle of the instrument. This handle contains also a rubber bulb for inflating the stomach with air before the photograph is taken.

A special *transformer* is provided with the camera which permits the use of the apparatus on direct or alternating current of any given voltage. On this transformer there is a special safety fuse, so that all danger to the patient is avoided.

The Technique.

The introduction of the tube and the taking of the photograph is said to be a simple matter. No anæsthetics are required, but the tube must, of course, be passed into an empty stomach. The best arrangement is for the patient to have no breakfast, having had a light supper the night before, and the photographs are taken in the early morning. The cameras are loaded with films in the dark-room and the apparatus is actually used in open daylight, the patient standing, sitting, or lying. It is, of course, possible to take the photograph under direct X ray guidance of the metal part of the tube, but this is not usually found to be necessary. The tube is introduced in the same way as an ordinary stomach-tube. A slight obstruction is felt and overcome when the cardia is reached, and passage through the cardia is easily recognised by the careful observer. The stomach is then gently inflated through the tube, experience and the sensations of the patient being a guide to the amount of inflation. For the first exposure a rubber tip about an inch in length can be attached to the camera. This facilitates introduction of the tube, and the fact that it is not rigid gives confidence to the manipulator in passing it down till a slight counterpressure is felt. The approximate distance the tube should be passed is estimated in advance by measuring on the bougie a distance from the teeth to the navel round a curve approximately corresponding to that of the back of the mouth. A metal ring marks this position. For a second exposure, especially necessary where pyloric trouble is suspected, a metal cap only ¼″ long replaces the rubber tip.

The exposure is made by a slight pressure of the

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[1] Heilpern, J., and Porges, O.: Klin. Woch., 1930, ix., 15.

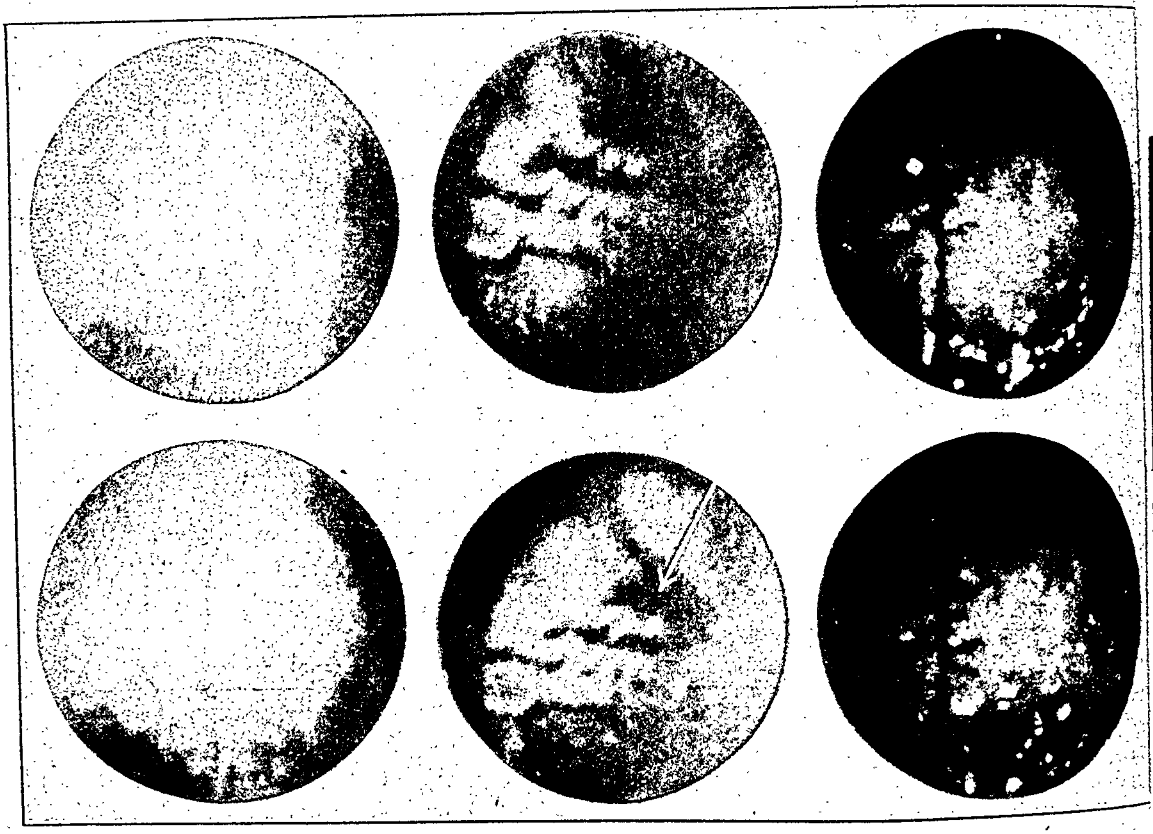
[2] Husserl, H.: Wien. Med. Woch., 1930, No. 23.

[3] Husserl, H.: Fortschritte auf dem Gebiete der Röntgenstrahlen, 1930, xlii., 342.

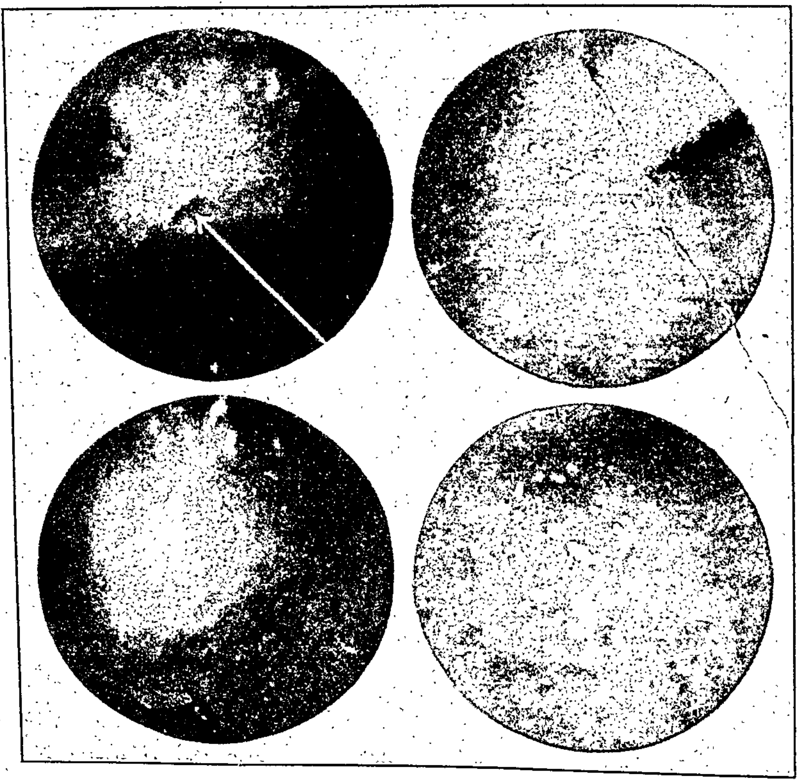
[4] Ehrentheil, O. F.: Wien. Med. Woch., 1930, No. 46.

[5] Bernstein, B. M., and Gray, I.: New York State Jour. Med., 1930, xxx., 433.

FIGS. 2 3 4



FIGS. 5 6



handle button and by a touch on the exposure button on the transformer. The handle button is then released and the tube is withdrawn. The whole procedure is said not to take more than 20 seconds, and to be free from more than very slight discomfort to the patient. The films are then developed and in cases of urgency they can be inspected while still wet under a microscope. When they are dry a special view-box permits of an exact enlargement (100 times). Since the distances of the pinholes from the camera are known, also the angle of incidence of the photograph, a

Descriptions of Illustrations.

FIG. 2.—Normal folds of the stomach wall.

FIG. 3.—" Chronic gastritis " round pylorus. Note prominent tortuous veins. Arrow points to pylorus.

FIG. 4.—Resection scar. Note traces of stitches.

FIG. 5.—Single ulcer on bend of lesser curvature.

FIG. 6.—Early carcinoma, with strawberry-like surface.

Each pair of photographs is taken at the same time, by the two cameras. The prints obtained show them close together, so that they can be examined stereoscopically.

photometer provided with the apparatus makes it possible to ascertain exactly how large an area of the interior of the stomach every film represents.

Interpretation.

The reading of the photographs calls for special study. It is of fundamental importance to be able to distinguish simple reflections of the mucosa from projections and cavities. This differentiation is facilitated by the fact that a projection has a shadow thrown by the light between the cameras, whereas in the absence of any projection or cavity there is a shadowless bright reflection only. It is claimed that after some experience, and help from those who have made a special study of interpretation of these photographs, it is easy to detect acute and chronic gastritis, ulcers, scars, polypi, and new growths, and even to recognise whether an ulcer is in a state of healing or the reverse.

The cost of one set of cameras complete with transformer is £120. Since it is usual to make two exposures at the same sitting, it is convenient to have second camera (£30) to avoid the delay of cleaning and reloading. The price of the enlarger is £10. The apparatus can be seen at Messrs. Allen and Hanburys, Surgical Instrument Department 48, Wigmore-street, London, W. 1.

A similar instrument is available for taking photographs of rectal conditions, and one adapted for the larynx is under trial.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

GENERAL PRACTITIONERS AND PUBLIC SERVICE.

A MEMORANDUM on the coördination of health services has been submitted to the county council of Lanark by the Lanarkshire Medical Practitioners' Union and the local division of the British Medical Association. The memorandum follows the broad general lines of the B.M.A. scheme. It states that within recent times the public health services have encroached more and more on the daily work of the general practitioner. The public health department of the county has definitely reached a stage at which wider extension necessarily involves the appointment of general practitioners rather than specialists to the staff, and this immediately raises questions of policy of the first importance. The question of whole-time officials must be considered against the alternative plan of bringing the general practitioner into closer association with the public health service. The practitioners recognise the excellent work performed in the past by whole-time health officials, but they think the time for a new departure has arrived. They suggest that much clinical work—e.g., inspection and treatment of school-children, maternity and child welfare, and domiciliary treatment of tuberculosis—could be efficiently performed by general practitioners on a part-time basis.

It is worth noting that in the early days of medical inspection and treatment of school-children, this scheme was proposed by the B.M.A., but was dropped after trial in several localities. Now, however, the system is so elaborate that there is work for part-time specialists, and the same is true of maternity and child welfare work. As for domiciliary treatment of tuberculosis, the insurance practitioners are already under certain obligations to look after their tuberculous patients at home; but the local authorities will no doubt consider the expense of whole-time as against part-time practitioners.

On the treatment of the poor, the memorandum states that the sick poor should not be segregated for purposes of medical relief, for there is no reason why they should in times of stress be compelled to leave their own doctor. Great stress is also laid on the need for diagnostic facilities, and it is suggested that the county council should provide diagnostic centres throughout the county, the staff to consist of general practitioners and specialists in the various departments, all on a part-time basis and remunerated by a sessional fee.

> "In these matters," the memorandum concludes, "reference has not been made to the medical officer of health, but the medical profession fully and frankly recognise that in schemes of this type the medical officer of health for the county must be the supervising and controlling authority. They regard it, however, as of the first importance, that the general practitioner should be brought right into the scheme."

Lanarkshire is the largest county in Scotland and, in public health, it is probably the most "advanced." There is not likely to be any violent antagonism to the views of the medical practitioners, and there are obvious openings in this scheme for many useful adjustments. The county of Lanark, including the towns, contains over 500,000 people, and it will be interesting to watch how this large county organisation will adapt itself to the detailed work of practice. One obvious problem is how to enable the private practitioner's patient to secure the value of modern diagnostic appliances and treatment, for these are problems that the domiciliary practitioner cannot longer face adequately by himself. In the large cities a certain amount of unregulated diagnostic service is available; but the time has come for making this service overt and sufficient.

CUBICLE WARD FOR PAYING PATIENTS.

Colonel J. A. Roxburgh, chairman of the managers of the Western Infirmary, Glasgow, has built and equipped a cubicle ward of seven beds for paying patients at the David Elder Infirmary at Govan in Fife. In opening the ward on Jan. 30th he spoke of the needs of people who were willing to pay something for their treatment but could not afford the high charges of nursing homes, with specialists' fees besides. At present the only treatment they could get, outside the general wards of the hospitals, was beyond their means. But if they were asked to pay anything he thought they should have a measure of the privacy which differentiates hospital from nursing home. The new cubicle ward had been built as an experiment. For the present there would be no fixed charge, but the patients would all be expected to pay something.

The ward is divided by partitions and curtains into seven cubicles each with enough space for a bed, a locker, and a chair. The patients can either enjoy complete privacy or, if they wish, the cubicles can be thrown open to form what is practically a single ward. Each cubicle has a wireless receiving apparatus.

The David Elder Infirmary is an annexe of the Western Infirmary.

THE PEKIN SKULL.

Under the auspices of the William Ramsay Henderson trust, which exists for the promotion of cerebral physiology, Prof. G. Elliot Smith, F.R.S., recently delivered a lecture in the University of Edinburgh on the discovery of the Pekin skull.[1]

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[1] See THE LANCET, Jan. 24th, p. 193.

He said he regarded the fossil remains of this early Pleistocene man as the most significant and illuminating relics of early man that have ever been discovered. Although it is impossible to speak with certainty, it appears entirely probable that it is at least a million years old. No implements of any kind have been found on this site in the last three years, despite very careful search, and it is thus impossible to say whether the Pekin man had developed the elements of craftsmanship or not. The chances were that a creature who had so far acquired the cerebral development distinctive of the human race would have used instruments of some sort, even if nothing more than sticks for offence or defence, or for grubbing up roots.

PROFESSORIAL CHANGES.

At a recent meeting of the University Court Prof. Arthur Robinson intimated that he would resign from the chair of anatomy as from the end of the present academic year. He has added extensively to our knowledge of embryology, and his work on prenatal death bids fair to be included in the list of classical researches.

The successor to Prof. Sutherland, who retired at the end of the last academic year, has been appointed by the Court of St. Andrew's University. The new professor of pathology is Dr. Daniel Fowler Cappell, who was lecturer in pathological histology in the University of Glasgow. Prof. Cappell is a graduate of Glasgow University and has been associated both in teaching and research with Prof. Muir. He was M'Cunn scholar from 1921 until 1923, when he became assistant to Prof. Muir and also assistant pathologist to the Western Infirmary. In 1928 he received the Foulis research scholarship, and his investigations have earned him a considerable reputation. He has also been appointed to the associated post of pathologist to the Royal Infirmary, Dundee.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

LEGISLATIVE CONTROL OF DRUGS.

IT has been felt for some considerable time that legislative action would have to be taken to control the manufacture and sale of drugs in India. For years the annual research workers' conference, held in Calcutta, have passed resolutions begging the Government of India to take some action in the matter. In 1927 the Council of State adopted a resolution urging provincial governments to take such action as might be possible to control the preparation and indiscriminate sale of medicinal drugs. In August last the Government of India appointed a small committee to explore and define the scope of this problem and to make recommendations. Lieut.-Colonel R. N. Chopra, I.M.S., professor of pharmacology at the Calcutta School of Tropical Medicine and Hygiene, has been appointed chairman of this committee, the members of which, three in number, include Father J. F. Caius, pharmacologist at the Haffkine Institute, Bombay, and Mr. H. C. Cooper, F.C.S., representing one of the leading firms of manufacturing chemists in India. The terms of reference are wide; they are to inquire into (1) the extent to which drugs and chemicals of impure quality and defective strength, particularly those recognised by the British Pharmacopœia, are imported, manufactured, and sold in British India; (2) the necessity in the public interest of controlling such importation, manufacture, and sale, and to make recommendations; to report how far these recommendations may be extended to known and approved medicinal preparations other than those referred to above, and to medicines made from indigenous drugs and chemicals; and (3) the need for legislation to restrict the profession of pharmacy to duly qualified persons and to make recommendations.

THE COMMITTEE GETS TO WORK.

The committee have already taken evidence in Madras, Calcutta, Patna, and a few other small stations. Questionaires have been issued to the general medical public, pharmacists, and manufacturing chemists, and those with any special experience have been requested to submit memoranda. It was at one time feared that its work might be boycotted by the Congress, as it had been suggested that the formation of this committee was the Government's reply to the boycott of British drugs. No charge could have been more absurd. The inquiry which has been contemplated for years is designed to place the manufacture of drugs in India on as sound a footing as it is in England and America. Happily reason prevailed and the committee has been well supported on the whole, although the names of some of Calcutta's leading Indian practitioners are missing from the list of witnesses. The stories told became monotonous in their similarity to one another; bottles labelled cocaine but containing bicarbonate of soda, others labelled quinine from which the alkaloid was absent, inactive tinctures, and prescriptions for 10 grains of potassium iodide to the ounce made up with only one. Few were satisfied with the present state of affairs; some made helpful proposals as the lines on which legislation might be introduced, others amusing ones. One patriot suggested that the importation of drugs should be entirely prohibited; India could manufacture her own—if not at the moment, factories could be built; the Government should order a factory or two. The necessity for this committee grows more apparent as each witness is called.

RESEARCH WORKERS IN CONFERENCE.

The All-India Conference of Medical Research Workers, which held its eighth annual meeting in Calcutta last November, is more of the nature of a business conference than a scientific one. Representative research workers from the various provinces meet to discuss the best way to use the available funds. Short résumés of past work and programmes of future work are read, and resolutions are circulated to the Governments concerned. In his opening address Major-General J. W. D. Megaw, D.G., I.M.S., claimed that he was in a sense the father of the conference, as it was at his suggestion that seven years previously the first conference was held. Discussing the general policy of the Indian Research Fund Association, he said he had heard complaints that this was an I.M.S. reserve. He had taken the trouble to obtain the actual figures of the whole-time employees of the Association; they were as follows:—

I.M.S. officers—all European	4
Military assistant or subassistant surgeons—all Indians or statutory natives of India ..	11
Independent medical practitioners, of whom 4 were Europeans and 33 Indians	37
Independent workers, non-medical, of whom 3 were Europeans and 18 Indians	21

The Association also footed the bill for research done by numerous research workers, both Indian and European, whose salaries were derived from other resources. Whatever point this criticism might have had in the past, it was not applicable at the present day. Subcommittees on kala-azar, cholera, rabies, plague, and malaria were constituted to formulate suggestions for the coördination of work on these subjects. Amongst the resolutions passed was one urging the foundation of cholera commission.

AN ALL-INDIA INSTITUTE.

The buildings of the All-India Institute of Hygiene and Public Health, which is being presented by the Rockefeller Foundation, are now rapidly rising and have reached the first-floor level. The Institute faces the Calcutta School of Tropical Medicine, and it is to be opened, if all goes well, next January. Meanwhile the scheme for a central research institute at Dehra-Dun is dead. Its death duties, however, are likely to be heavy, and whatever scheme succeeds will have to be a more modest one. There is strong opposition from all quarters to the extensive sinking of capital in bricks and mortar.

MEDICINE AND THE LAW.

A Question of Ambulance Practice.

THE London County Council has rightly taken notice of a recent case at the Central Criminal Court where the jury, supported apparently by the opinion of the judge and of a distinguished medical witness, censured the "ambulance authorities" for leaving an ambulance "in the middle of the road," and recommended that instructions be given "to obviate this in future for the protection of the public." The facts will enable an opinion to be formed. Last November a woman was knocked down by a motor cyclist on a Greenwich road which was about 30 feet wide. Summoned at 10.33 P.M., the ambulance was stopped by a police officer about 7 feet from the kerb. The injured woman, only semi-conscious owing to concussion, lay about 4 feet from the kerb. The motor cyclist, also injured, lay on the pavement. The woman had scalp and face wounds which were bandaged without moving her. At this point a motor-car, driven through the onlookers at great speed in spite of the warning of a police officer who was standing a few yards from the ambulance, caught the woman, carried her along for several yards, and then threw her down, one wheel passing over her body. The patient, now more gravely injured than before, was again bandaged, and was removed to hospital where she died within two hours. The motor-car driver, a Royal Artillery officer stationed at Woolwich, was tried at the Central Criminal Court on various charges—manslaughter, being drunk in charge of a motor-car, and causing bodily harm to the woman by wanton driving. He was found "not guilty," and the jury added the rider already mentioned. The judge said he thought the rider quite reasonable; in his own view it was "a wrong practice to bandage people in the middle of the road; an injured person should be removed to the side-walk as quickly and gently as possible, and then transferred to the ambulance." Sir William Willcox, in giving evidence for the defence, had previously said he thought it ill-advised to treat the patient on a London road at night, and that to have lifted her to the pavement for treatment would have been no greater risk than lifting her into the ambulance. The position of the ambulance (a conspicuous and well-illuminated object) and the consequent traffic arrangements would seem to depend in part at least upon the directions of the police officer when (as happened on this occasion) a police officer is present. But there remains the important question, a question to be answered not by judge and jury but by the best medical and surgical opinion, whether or not a seriously injured patient ought to be moved without examination and treatment or not. The jury said it was negligent to leave the ambulance "in the middle of the road" (i.e., 7 feet from the kerb on a road 30 feet wide); the judge suggests it was negligent not to lift her at once to the pavement. Technical opinion, on the other hand, indicates that negligence might lie in the opposite direction. "First Aid to the Injured," the St. John Ambulance Association text-book, observes that, where there are fractures (a not infrequent contingency in road traffic accidents), "no matter how crowded the thoroughfare or how short the distance to a more convenient or comfortable place, no attempt must be made to move the patient until the limb has been rendered as immovable as possible by splints or other means of restraint, unless life is in danger from some other cause." The Red Cross Society's text-book contains similar instructions. The Central Public Health Committee of the London County Council has specially consulted a number of experts in view of the recent incident; they unanimously support the view that the correct procedure was followed in the case under discussion.

The rider of a jury can be taken too seriously. It may indicate merely the tenacious pursuit of some red herring trailed by the defending counsel who is trying various expedients in default of, or in addition to, other more promising lines of defence. The observations of a judge, too, in reassuring a jury when the trial is over, are informal civilities of even less judicial value than obiter dicta uttered during the discussion of some point of law. It is not clear whether the opinion of the medical expert, who was a witness for the defence, was an *ad hoc* observation upon a special set of facts or a general and considered view upon an abstract issue. Meanwhile it is important that no doubt should exist on the question of ambulance treatment—namely, whether it is wrong to move the seriously injured patient without examination (as the technical publications suggest), or wrong not to move the patient quickly (as the judge suggests). There should be a definite ruling one way or the other by experts in ambulance practice and training in consultation with the Commissioner of Police whose officers are not only responsible for traffic control but are also themselves qualified in first-aid treatment. The question, it may be submitted with deference, is not primarily a question of law.

PAY BEDS AT WEST LONDON HOSPITAL.—It is proposed greatly to extend the system of pay beds at the West London Hospital, Hammersmith. There are, at present, 26 such beds, the occupants of which pay five guineas a week for a single and four guineas for a double room, plus a fee for specialists' services. It is now intended to erect a new wing to accommodate 126 paying patients at an inclusive charge, graduated according to ability to pay, with a minimum of seven guineas a week. This fixed payment will cover all services, including medical and surgical treatment, specialists' fees, and drugs, and it is believed that the new policy will remove from a large class of patients of moderate means the fear that the total cost of a hospital operation will be beyond their means. When the new wing has been built it is expected that this side of the hospital's work will be self-supporting. The scheme will involve the rebuilding of the whole of the front of the hospital which abuts upon the main road and is exceedingly noisy. It is estimated that between £150,000 and £200,000 will be needed to complete the scheme.

THE SERVICES

HEALTH OF THE ARMY IN 1929.

THE report on the health of the army[1] is signed by Lieut.-General Sir H. B. Fawcus. It appears just a year after its predecessor, has 28 more pages, mainly devoted to India, and costs 2*s.* less. It registers notable advance in the struggle for greater scientific precision in diagnosis and the study of the natural history of disease. The figures are much the same as last year; the most notable changes are due to the spring epidemic of influenza in the army at home, which, however, left the Western district and Northern Ireland untouched.

The report is concerned with 9320 officers and 179,083 other ranks. Among the latter the chief causes of admission to hospital were (per 1000) "other digestive diseases," not tonsillitis nor of the liver, 55·4 (last year 51·6); injuries, 52·1 (53·3); malaria, 41·2 (35·7); tonsillitis, 37·9 (33·3); influenza, 36·8 (8·8); venereal disease, 35·0 (39·3); diseases of the areolar tissue, 34·7 (36·9). Enteric and dysentery, pneumonia, sand-fly fever, and scabies were much as in 1928. Gonorrhœa is treated with exotoxin in England, and cases leave hospital at home six days sooner than abroad, where each lasts 60 days. The death-rate was 2·45 (2·36), the chief causes being injuries, 104 (133); pneumonia, 63 (59); "other digestive," 53 (44); suicide, 30 (25); enteric group, 20 (20); influenza, 19 (1); tuberculosis, all, 25 (30). The invaliding-rate was 10·10 (9·06), chiefly due to disease of the middle ear, 260 (246); and tubercle, all, 233 (207); 47 (34) were discharged for hysteria. The disease causing most loss of service is gonorrhœa, and next to that is inflammation of areolar tissue. Scabies cases, 718 (703), averaged each a day longer under treatment than in 1928. Dysentery in India is about 80 per cent. bacillary. Of 92 cases of hepatitis and liver abscess, 74 were amœbic, but 50 gave no history of previous dysentery or diarrhœa. Enteric was reduced at home, slightly increased abroad. Women and children were better protected by inoculation in the army generally, officers and men, in India. Command laboratories are giving great satisfaction in India; they are staffed in part with assistant surgeons, of whom we do not think we have before heard in the army; food-handlers were examined to the number of 15,922, and 12 with enteric group bacilli were isolated; none of the carriers had been associated with any outbreak of disease. Malaria gave a larger admission-rate this year, as there were many cases on the N.W. Frontier. There was also a case in England, in a man who had never been in a malarious country; he had tertian periodicity with *P. vivax* in his blood. "Cold storage" of troops and screening of barracks continue to give satisfaction in India, as does plasmoquine in treatment. The short fevers are being carefully investigated, and we are glad to see P.U.O. readmitted as a diagnosis when the origin really is, after consideration, uncertain. Three cases from Egypt seem to have been due to *M. catarrhalis.* There was, perhaps in Malta, a case thought to be sand-fly fever, but many films were studied by two experts for two hours each for three days, when a single malarial parasite was at last seen; typical benign tertian developed some weeks later.

Consideration is being given to the prevalence of pulmonary tuberculosis by units, by ages, and by length of service. Why is there twice as much in the Foot Guards as in the infantry; and why does liability become doubled after ten years' service? At any rate, this disease is being seriously investigated, as well it may be, when through it 209 men are lost to the service in this one year. Except for Jamaica, China shows most venereal disease. It is questioned if men after operation for gastric ulcer, in or out of the service, are fit to stand hard work. Of appendicitis 805 acute cases are reported with six deaths, and 12 chronic, who all recovered after operation. From one kidney there were removed 10 large and 140 small calculi. Injection of coagulating liquids, usually quinine and urethane, for the cure of varicose veins has become a routine. There is a new first field dressing, gauze in 1/1000 acriflavine, sterilised. Many new operating theatres, hospital extensions, married quarters, and barracks are mentioned. Water-supply was a difficulty in Hong-Kong when the spring rains did not come, and efforts at rain-making failed, but no damage to health occurred; a new reservoir is being built. In Egypt, to reduce injuries from athletics, as the season begins graduated exercises are first practised in community. Dental treatment is being extended, but slowly, as dentists do not come forward as wished. Several stories are told on pp. 40 and 50 of benefit to general health from dental treatment. A, aged 25, had always had skin eruptions until he had five septic teeth removed, when his acne became cured. B had 76 boils in six months; he had a pulpless tooth removed and had no more boils. In other cases the diseases cured were rheumatism, optic neuritis, and lupus erythematosus. Recruits are accepted with reduced standards of teeth, if they weigh 6 lb. over the normal. A new electrically lighted otoscope is issued to recruiting officers; it has made detection of inflammatory conditions easier, and saved later rejections.

Mother and child welfare centres are more and more liked and useful. In India 826 women were confined without a death, and 1900 elsewhere, of whom one died of pneumonia and another in childbirth—one death in 2726 births.

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[1] H.M. Stationery Office. Pp. 172. 3*s.*

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. J. D. Richmond to be temp. Col.

Maj. (temp. Lt.-Col.) A. Irvine-Fortescue to be Lt.-Col vice Lt.-Col. (temp. Col.) H. H. J. Fawcett.

Maj. D. F. Mackenzie to be temp. Lt.-Col.

Maj. F. R. Fletcher retires, receiving a gratuity.

Lt. D. R. W. Burbury to be Capt.

ARMY DENTAL CORPS.

2nd Lt. A. N. Moon, from 43rd (Wessex) Divl. Engr T.A., to be Lt. (on prob.).

TERRITORIAL ARMY.

Lt. M. S. Scott to be Capt.

Lt. J. A. Matheson (late M.G.C.) to be Lt.

ROYAL AIR FORCE.

Flying Officer A. E. Vawser is promoted to the rank Flight Lt.

The undermentioned Flight Lts. are transferred to th Reserve, Class D (ii): R. F. MacLatchy and J. J. Quinla

Dental Branch.—The undermentioned are granted no permanent commissions as Flying Officers: J. G. Stewa and J. J. Lawson.

DEATHS IN THE SERVICES.

Lieut.-Colonel Samuel Ferguson Bigger, I.M.S. (retd.), wh died at his residence in Bray, Co. Wicklow, on Feb. 2n was born in Belfast in 1854. He received his medic education in Liverpool, and qualified with the M.R.C.S. En in 1875. Subsequently he graduated M.B. Lond. In 18 he passed the entrance examination for the I.M.S., w gazetted surgeon in the following year, and was attache to the 3rd Punjab Cavalry. His service in India, which w chiefly on the military side, included the Afghan War 1879–80, in which he took part in the Zaimusht Expeditio the operations in the Kuram Valley, and the capture Zawa (medal). For his work with the Chin-Lushai Expe tionary Force in 1889–90 he was mentioned in dispatche and received the medal and clasp. He was princip medical officer of the Third Brigade with the Warista Expedition of 1894 (clasp), and took part in the action Dargai in the Tirah Campaign (mentioned in dispatche

(*Continued at foot of next page.*)

PUBLIC HEALTH SERVICES

THE INFLUENZA EPIDEMIC OF 1929.

In completing his statistical review [1] for 1929, the Registrar-General gives us an interesting study of the epidemic of influenza in that year, the mortality for which was the highest experienced in any year since the great epidemic of 1918–19. Allowing for the increased age of the population the mortality for the year was 734 per million, being 623 for males and 50 for females. Of this mortality, 34 per cent. occurred in February and 41 in March, the concentration on the first quarter of the year being the same as in other years since the great epidemic—viz: 922, 1924, and 1927. In each of these four years the death-rate of the first quarter rose enormously (in 929 by 638 per cent.), while that of the other nine months was little affected. A change of age distribution on which our epidemiologists lay great stress is now complete, for no trace remains of the remarkable diversion towards early life which was a feature of the great epidemic, the distribution being much the same for 1929 as before the shift towards youth in 918. Those who receive these data are, we understand, always on the look-out for any sign of this shift as a new epidemic gets under weigh. Apart from a somewhat greater incidence in childhood, the proportion of deaths at each age was much the same in 1929 as before 1918, and at ages over 75 at which the proportion had tended, ever since its remarkable depression in 1918, to remain below that in 1890–917 the latter is now exceeded. Topographically, the disease was evenly distributed, only Wales escaping lightly, while two waves of invasion spread simultaneously from the south and from the north to coalesce in the Midlands.

PORT SANITARY AUTHORITIES.

Manchester.

Dr. W. F. Dearden, in his twenty-fourth annual report to the Port Authority, mentions that no case of cholera, plague, or yellow fever appeared, that two cases of pneumonia and single cases of typhoid, tuberculosis, and scarlet fever were sent to hospital, and that four cases of malaria arrived but were treated on board. No infectious cases were notified in canal boats, but two cases of small-pox went to the hospital of a neighbouring authority. On board ships 1007 rats were killed, and on shore 236; 36 examined were all found free from plague. Trapping killed 38 (the maximum) in one grain ship. These figures, all smaller than in earlier years, seem to indicate that rats are being reduced. Sulphur dioxide was the fumigant most often used. Among the 130 tons of food condemned, 77 were of grain or cereals. Inspection was made of 2017 ships, of which 59 had sanitary defects, and of these 341 were made sanitary before sailing. There was defect in one of four English vessels, and one in seven foreign. The chief defects were in the forecastles, of which 138 were dirty, 94 leaking; there were 74 defects in water-closets, one had indeed no flushing apparatus; that only one was so found shows how great has recently been the advance in hygiene at sea. But Dr. Dearden observes that the standard of hygiene in the ships of several foreign powers is higher than in British ships, that these other nations require crew spaces to be aft, two-berth cabins to be provided for the crew, also a messroom, and a hospital cabin, and that in fact these are being increasingly provided, whereas British ships, which were built and fitted on these lines during and after the war, were now falling back into the old bad ways. Only in providing wash-places and shower baths were the British ships still superior. He examined in 1928–29 47 new British ships, of which 64 per cent. had again put their crew spaces forward, but of 29 foreign ships only 20 per cent. Not quite half the British ships had hospital cabins though all except one foreign ship had. It will take long years to win back for us our old hygienic supremacy on the seas because, as Dr. Dearden remarks, we have no authority on the hygienic construction of ships, and what the Board of Trade desires to see it can only recommend.

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[1] Text. H.M. Stationery Office. Pp. 141. 2s. 6d.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 31ST, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 286 (last week 272); scarlet fever, 1677; diphtheria, 1520; enteric fever, 28; pneumonia, 2329; puerperal fever, 52; puerperal pyrexia, 138; cerebro-spinal fever, 27; acute poliomyelitis, 5; acute polio-encephalitis, 2; encephalitis lethargica, 13; continued fever, 1; dysentery, 13; ophthalmia neonatorum, 100. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 3rd–4th was as follows:—Small-pox, 250 under treatment, 2 under observation (last week 255 and 1 respectively); scarlet fever, 1544; diphtheria, 1950; enteric fever, 12; measles, 113; whoping-cough, 231; puerperal fever, 32 (plus 2 babies); encephalitis lethargica, 121; poliomyelitis, 3; "other diseases" 112. At St. Margaret's Hospital there were 10 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 72 (1) from measles, 7 (1) from scarlet fever, 44 (10) from whooping-cough, 43 (7) from diphtheria, 66 (13) from diarrhœa and enteritis under two years, and 309 (81) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London occurred at Cambridge and Liverpool. Thirty-one fatal cases of measles were reported from Liverpool, 6 each from Bristol, Newcastle-on-Tyne, and Tynemouth, 5 from Hull. Liverpool reported 6 deaths from whooping-cough, Bolton 3. Diphtheria claimed 3 victims each at Birmingham, Liverpool, and Leeds. Diarrhœa was credited with 8 deaths at Manchester, 6 at Liverpool, 5 at Birmingham, and 4 at Portsmouth. The 228 fatal cases of influenza outside London are scattered over 76 great towns; 60 deaths were reported from Liverpool, 10 from Birkenhead, 8 from Wallasey, 6 from Croydon, 5 each from Plymouth, Birmingham, Manchester, and South Shields.

The number of stillbirths notified during the week was 295 (corresponding to a rate of 46 per 1000 births), including 41 in London.

(Continued from previous page.)

medal with two clasps). While in India he established a considerable reputation as an operating surgeon, particularly in operations for stone and cataract. He was promoted Lieut.-Colonel in 1898, and retired from the service in 1903. Since his retirement he lived in Bray, where he was well known as a chess player and gardener and, in many parts of Ireland, as previously in India, as a skilled fisherman. He is survived by his widow and two brothers—Colonel O. Bigger, I.S.O., and Sir Edward Coey Bigger, M.D.

Manchester Hospitals' Debts.—At the annual meeting of the Manchester Royal Eye Hospital it was stated that in four years the annual deficit on the Manchester hospitals had decreased from nearly £40,000 to just over £16,000. This decrease is said to be largely due to the allocations of the Hospital Saturday Fund, which in 1927 gave £14,186 to Manchester hospitals; in 1928, £28,507; and in 1929, £33,949. The accounts of the Eye Hospital for the year 1930 showed a deficit of £158.

CORRESPONDENCE

BURNING DURING ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—It is difficult to agree with the conclusion given on p. 305 of your issue of last week that the "responsibility of the anæsthetist . . . is prolonged into the bedroom where the patient lies still unconscious." There must be a time, clear-cut and definite, when his responsibility ceases, and I hold that it is when the administration comes to an end, and that there is no obligation on him even to see the patient back to bed, although he frequently or usually does so partly because his services are needed in place of those of a porter but chiefly because he follows an old custom which dates from the days of unskilled nursing. The anæsthetist does not select the nursing home, nor the nurse when the operation is in a private house, and he cannot logically be held responsible for her acts of commission or omission. He could not, for example, be held responsible for an abscess resulting from the use by the nurse of a dirty needle in giving an injection of atropine before the operation, although he would have to bear the blame if as a consequence of a carelessly written prescription or a lack of clearness in a telephone message the patient were to receive an overdose of morphine or other preliminary sedative. Again, I do not think that the anæsthetist has any power to give instructions to the nurse at the end of the administration, except at the request of the surgeon, who may consult him as a matter of courtesy or because some special method of anæsthesia or some new drug has been used with which the surgeon has small acquaintance.

If one looks at this question from the point of view of the nurse, one has to remember that she is to-day part of a team. She is not a Sairey Gamp, but a trained, skilled, and certificated individual, who considers herself, and rightly, responsible for the care of the patient both before and after operation, and resents any question or inquiry which might show lack of confidence in her care and ability. Reference to a standard book on nursing such as Ashdown will show that the importance of the preparation of an "operation bed," and the protection of the patient from a burn by a hot-water bottle are strongly emphasised, in fact it is there plainly stated that a burn resulting from its use is a disgrace to the nurse. Cuff and Pugh, too, state that nothing reflects greater discredit on a nurse than a burn produced by a hot-water bottle. There can be little doubt then that the nursing profession does not consider the anæsthetist responsible for these unfortunate accidents, but its own members.

I am, Sir, yours faithfully,

FRANCIS E. SHIPWAY.

York-terrace, Regent's Park, N.W., Feb. 8th, 1931.

To the Editor of THE LANCET.

SIR,—Last week you drew attention to an interesting legal case, but the question of responsibility of the surgeon and the anæsthetist was left somewhat vague. It is highly desirable that there should be some authoritative statement on this matter, in order that doctors may know their responsibility in the eyes of the law.

Let us consider the case of the patient in a nursing institution, unconscious as the result of anæsthesia or other cause. Full responsiblity for the nursing of the unconscious patient would be readily admitted and rightly undertaken by the nursing staff, and deviation from routine nursing treatment would be made only on the express directions of the doctor in charge of the case. That the doctors should search the bed for hot-water bottles is unthinkable and would be resented as an interference with nursing duties. When an unfortunate accident such as this occurs, it is due to a fault in the nursing service, and an attempt to saddle the doctors with the responsibility for a fault in a duty which is not theirs, is, I maintain, not justified.

It is not reasonable to suppose that a claim for damages for the result of such a nursing accident would succeed against a doctor whose patient was unconscious as the result of cerebral hæmorrhage, or against a motorist who had caused unconsciousness from concussion in a victim of a motor accident. As in the medical case, and in the accident case, so in the case of the unconscious patient recovering from the anæsthetic state, in which he has been placed by an anæsthetist in the course of his duty, the damage resulting from the burn would not have occurred but for the fault in the nursing service, and it is on that service that the responsibility should rest.

I am, Sir, yours faithfully,

C. GIBSON.

Worthing, Feb. 9th, 1931.

THE LONDON CLINIC AND NURSING HOME.

To the Editor of THE LANCET.

SIR,—The building of the London Clinic is now nearing completion, and the executive committee of the medical advisory board consider that the time has come to explain its objects and ideals more fully and to give some details of the means by which it is hoped that they may be achieved.

It has long been realised both by the medical profession and by the lay public that the modern developments of medicine necessitate wider facilities for the investigation and treatment of disease than are at present available for the general public. There is probably no city in the world which presents such a contrast in the provision which it makes for illness as does the City of London. On the one hand, there are the voluntary hospitals, unrivalled as monuments of charity, where the poor have at their absolute disposal every resource that modern medicine can provide or surgery devise. On the other hand, those whose circumstances or whose pride remove them from the hospital class, have often to be satisfied with makeshift accommodation and are excluded from the resources in equipment and coördination which are the foundation of the work of our hospitals.

Modern specialist treatment can be carried out only in a building specially adapted for the investigation and treatment of disease, organised on modern lines, and provided with adequate laboratories and X ray equipment. The need for such a building containing rooms to suit all classes of paying patients is so obvious that one would have thought little difficulty would be experienced in finding the money for its erection. Yet this has taken 12 years of difficult negotiation to achieve. Faced with the dilemma that on the one hand there is a strong feeling against the financing of nursing homes by medical men, whilst on the other no financial group was prepared to take a financial risk which medical men refused to share, a solution agreeable to both parties was at last reached. A company was formed to put up a building consisting of a nursing home, for the finance of which the ompany would be responsible; and a number of onsulting rooms the lease of which the medical men [illegible] urchase without any breach of medical ethics. his arrangement assured the company of satisfactory edical support without involving medical men in nancial responsibility for their affairs.

The building, which is rapidly approaching ompletion, is situated on the south side of Marylebone-oad, bounded on the west by Devonshire-place, nd on the east by Harley-street. Special care has een taken to protect the patients from noise and ibration. The steel uprights which support the uilding are embedded in a system of padding, hich ensures a complete absence of all vibration. he patients' rooms face, not on the Marylebone-oad, but on the south, south-east, and south-west ontages, where they enjoy a wide outlook and are ntirely protected from noise. The building is so igh that many of the rooms enjoy a view extending cross London to the hills of Kent.

The building has been designed with the utmost are and in constant consultation with expert medical pinion. In order to obtain the very latest informa-on on modern hospital equipment and organisation, committee of the directors of the company and the embers of the medical group visited all the most odern hospitals in Sweden, Denmark, Holland, nd Paris, as well as others in France, Germany, and merica, and we are convinced that this clinic will t an entirely new standard in design and equipment. wide range of accommodation between small single ooms and private suites will meet the varying requirements of patients, but in every instance the standard f comfort will be the highest attainable, and special ttention has been paid to those small amenities hich mean so much when one is ill. The kitchens ill be on the most modern lines, and in view of its ncreasing medical importance a special diet kitchen under expert control has been installed.

An outstanding feature is the provision made for aternity cases and for children. For the former separate floor has been specially equipped, with rrangements which ensure absolute quiet and privacy, nd a special nursing staff will be reserved exclusively r these patients. The children will be accommodated in a separate wing, so arranged that each hild can, if necessary, be accompanied by its own amily nurse, whilst a large solarium, opening directly n the south side of this wing, will give every possible pportunity for fresh air and sunshine.

As regards the staffing of the hospital two features ill add greatly to the comfort of the patient: the ursing staff will be sufficiently large to supply special urses—usually a costly item—at a very low charge; nd there will be two resident medical officers who an be called upon at any moment of emergency. n regard to the latter it must be clearly understood hat these resident medical officers will in no way surp the authority of the patient's own medical dviser. It is an essential part of our conception hat the patient should still remain in contact with is regular doctor, for we consider this of the utmost mportance for the continuity of treatment. The uilding will thus be a large nursing home open to he medical profession of the whole country, equipped nd staffed with all the resources of a modern hospital.

In addition, it is proposed to develop within the group of medical men who occupy the consulting rooms a plan of combined work, so that patients of moderate means may be saved the multiple consultations, involving so much expenditure of time and money, which often make the elucidation of their malady such a costly process. Such service of mutual assistance between the members of the staff is universal in our voluntary hospitals, and there is no single feature of their organisation which is of greater value to the patient. The development of such a service for those who are just outside the hospital clientele is by no means an easy matter, and will demand very careful consideration. We have no doubt, however, of the necessity for such a service, and its provision will be one of our earliest objects. By such a service, backed by rooms at the lowest charge which is economically possible, we shall effectively bridge the present gulf between the poor and the wealthy. We would, however, reiterate that this service, in common with all the other services of the clinic, is available to patients solely through their medical advisers. A wide experience has convinced us that to make use of specialists' services except in a consultative capacity is a definite disadvantage to the patient, whose interests are best served by the closest possible coöperation between those whom have charge of his health.

This is the first real effort in this country to extend the advantages of an organised specialist service to those who are excluded from the services of charity. It will provide suites of rooms offering a convenience and a comfort never before attempted, whilst more modest accommodation will be available at the lowest rates compatible with efficient treatment and service. The dreams of the group of medical men who are responsible for its initiation have only been brought to fruition by years of laborious effort. It is their earnest desire that this building should be freely open to the whole of their medical brethren, and that it should bring within the reach of patients of every class advantages which have not hitherto been generally available.

We are, Sir, yours faithfully,

H. MORELAND MCCREA (Chairman),	W. ROWLEY BRISTOW,
G. LENTHAL CHEATLE (Vice-Chairman),	WALTER HOWARTH,
A. P. BEDDARD,	H. S. SOUTTAR,
	A. J. WALTON,

Executive Committee to the Medical Advisory Board.

Feb. 10th, 1931.

THE SOURCE OF PUERPERAL INFECTION.

To the Editor of THE LANCET.

SIR,—Your leading article of Jan. 31st (p. 250) strongly supports the work of those who believe in the exogenous source of puerperal infection. It is of interest therefore to raise the following matter at this point.

The source of such infection, it is suggested, is the throat of the attendant or of those in contact with the patient; and even when the carrier is engaged in swabbing the vulva with an antiseptic, the streptococcus can yet establish itself, as was recorded in the Sheffield series of cases. Yet there are many surgeons who still open an abdomen without wearing a mask, and still many more who do not require all those entering the theatre to wear one; yet nothing untoward is observed in the subsequent course of these numerous laparotomies which could be attributed to infection from the unguarded throat of someone in the theatre.

Why then the extraordinary susceptibility of the post-partum uterus? A possible suggestion is that in no other condition is there the requisite pabulum of blood under such ideal cultural conditions as exist in such a uterus. To decide this point it would be of interest, therefore, to know the incidence of puerperal sepsis in cases where (1) it is known that no vaginal examination at all has been made, as in the case of dwarfs and gross deformity, and Cæsarean section has been performed, and (2) cases in which (*a*) similar conditions have been observed, (*b*) numerous examinations have been made, both (*a*) and (*b*) being followed by Cæsaran section and hysterectomy.

If it could be thus shown that the incidence of such infection were negligible in amount under group (2) and particularly under (*b*) there would be a strong presumption that the absence of the large quantity of blood must be a factor. Whilst admitting that the absence of the large absorbing surface of the endometrium must be discounted under group (2) I believe that such information would still be of value in elucidating the factors concerned with the pressing problem of puerperal sepsis.

I am, Sir, yours faithfully,

BERNARD SANDLER, M.B., Ch.B.,
Manchester Victoria Memorial Jewish Hospital, Cheetham.
Feb. 8th, 1931.

THE QUALITY OF PANEL SERVICE.

To the Editor of THE LANCET.

SIR,—As a panel practitioner I entirely agree with Dr. Fenwick that national health prescribing is definitely restricted. Irritating interviews to explain apparent over-prescribing, and frequent notices from insurance committees of prescribing being above the area average, result in a measure of economy which produces restriction. The withholding of such comforts as liniments, lineti, inhalations, &c., may make little difference to the end of an illness, and may result in satisfying the economists; but the patient endures more distress than he need have done.

I am, Sir, yours faithfully,

M. DE LACEY, M.B., B.S.
Sheerness, Kent, Feb. 6th, 1931.

VARIOLA MINOR.

To the Editor of THE LANCET.

SIR,—I regret to learn from your leading article last week, entitled the Small-pox Hospital, that "few medical officers of health who have had experience of the current type of small-pox are now greatly concerned when it is notified to them," and that the same measures are not taken to control the disease as are taken in variola major. Later you state that if cross infection occurred in the wards of a fever hospital it would not be a matter of much consequence.

Personally I feel that medical officers of health should make as great efforts in combating this disease as variola major. If they do so, it is probable that the long continued spread will be stopped and the disease extirpated. No doubt the disease is relatively mild, with a negligible mortality and a relatively low infective power, but many persons attacked suffer severely. The point I wish to emphasise, and with which I have no doubt you agree, is that seeing it is possible to banish this disease, no effort should be spared in controlling its spread. If medical officers of health, general practitioners, and laymen once assume that variola minor may be lightly regarded, then there is a likelihood that the disease may become endemic, which would be a reproach to the health service of this country.

It is the fear that your editorial may unintentionally lead to laxness that compels me to write this note.

I am, Sir, yours faithfully,

DUNCAN FORBES,
Medical Officer of Health, Brighton.
Feb. 9th, 1931.

MASTOIDITIS IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—Since the question of the frequency of otitis media and mastoiditis as a complication of diphtheria has been raised by Dr. Underwood, perhaps the following observations may prove of interest to some. During the last ten weeks 100 cases of diphtheria have been under treatment in this hospital, and otitis media has occurred in no less than six. In four of the cases the inflammation of the ear was bilateral. In five of the six cases the diphtheria was of a very severe faucial type, one case proving fatal on the seventh day of illness. In the sixth case the larynx only was affected. Diagnosis was in all cases confirmed by examination of cultures from the throat. Staphylococci, streptococci, and diphtheroid organisms were recovered from the aural discharge, but never an organism which qualified as a true diphtheria bacillus.

Mastoiditis occurred in one of the cases, the history of which is shortly as follows:—

A boy, 2½ years of age, had been unwell for four days before admission on Nov. 22nd, when he was very ill; the face had that extreme pallor characteristic of diphtheritic intoxication, and the circulation was obviously failing. Membrane was present in considerable amount on both tonsils, and on the posterior pharyngeal wall. He received 100,000 antitoxin units at a single dose. On Dec. 6th, although he still suffered from circulatory disturbance, and had developed some degree of palatal paralysis, his general condition was much better. But a slight rise in temperature led to examination of the ears, when the left drumhead was found to be red and bulging. Paracentesis was performed; and a copious purulent discharge followed. He continued to improve slowly until Dec. 17th, when paracentesis of the right drum had to be performed. Discharge from both ears persisted, and on Feb. 1st the temperature and pulse-rate rose. Next day there was a tender swelling over the right mastoid process, and that night a Schwartze operation was performed by Dr. R. P. Mathers. Pus was found in the antrum and in other cells. The boy is making a good recovery.

The part played by the diphtheria bacillus in these infections is difficult to assess. Most of my cases have been in ill-nourished children of the poorest class, who have been further debilitated by a severe attack of diphtheria. Possibly the bacterial cause of the otitis is organisms which are only what has been described as "opportunists in pathogenicity."

I am Sir, yours faithfully,

A. A. DOUGLAS,
Senior Medical Officer, King's Cross Hospital, Dundee.
Feb. 7th, 1931.

PREGNANCY AND TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—The judicial annotation on this subject in your issue of Jan. 31st (p. 251) is difficult to criticise, but having observed the course of numerous pregnancies in tuberculous women I should like strongly to side with those who would leave the pregnancy severely alone. Admitting that 50 per cent. of women with active tuberculosis are made worse by child-bearing, there are still a number that are unaffected and an appreciable percentage—19 from my own figures—who are improved. No evidence has yet been adduced that patients whose pregnancy has been interrupted fare better than the rest.

Regarding those patients that you specially mention, in whom the clinical onset of disease is first noted in pregnancy or after parturition, it is usually after the event, when there is no question of interruption, that the disease is diagnosed. As happens in other directions our judgment is hampered by statements repeated in text-books and by Dubois's oft-quoted aphorism: "If a woman threatened with phthisis marries she may bear the first accouchement well, a second with difficulty, a third never."

An important aspect of the question with which you did not deal is the number of the children of tuberculous mothers who become in their turn tuberculous, and this alone is enough to render essential the teaching of some efficient method of contraception.

I am, Sir, yours faithfully,

Paignton, Feb. 3rd, 1931. ERNEST WARD.

THE NATURE OF MINERS' NYSTAGMUS.

To the Editor of THE LANCET.

SIR,—Your leading article of Jan. 10th (p. 87) points out that in the occupational neuroses the prominent symptom is "an excrescence upon an underlying mental state." The subjects of miners' nystagmus are still taught that the eye condition is the "cause" of the mental state, which then becomes hopeless and certainly receives no understanding from our profession.

This letter is prompted by a report of an inquest in the *Birmingham Post* of Jan. 22nd with the alarmist headlines: "Miner Who Dreaded Nystagmus. Cause of a Pelsall Man's Suicide." The medical evidence stated that nystagmus gave rise to neurasthenia, and, when serious, it almost without exception affected the mentality of the man contracting it. Is there any other disease that behaves in this mysterious fashion? The whole hypothesis comes down from the days before, as your leader put it, mechanistic views had been modified by a knowledge of psychopathology. It amounts to telling psychoneurotic people that their troubles are due to a disease for which there is no remedy and no hope of anything except compensation. So long as this teaching remains orthodox we must expect the disease to increase and to be followed by more and more suicides.

Whatever may be the meaning of the oscillation, the disabling symptoms are always psychoneurotic, and it is full time for us to recognise the mess we have got into by ignoring this fact. It is time too that we faced this bogy of neurasthenia and asked ourselves what we mean when we talk about it. As it is, we have a symptom with no known pathology mysteriously causing a disease, likewise with no known pathology, the very name of which is becoming an object of contempt because of the cover it offers to untidy thinking.

I am, Sir, yours faithfully,

Portsmouth, Feb. 5th, 1931. W. S. INMAN.

SEX DETERMINATION.

To the Editor of THE LANCET.

SIR,—With reference to Major Williamson's letter in your last issue, I can add two cases of childbirth in which the date of conception was known to the three he quotes. In the first case, a boy, conception occurred 13 days after the beginning of a period. In the second case, a girl, conception occurred 20 days after the beginning of the last period. The two were two successive pregnancies in the same woman. In the case of the boy the gestation time was 277 days, in the case of the girl it was 268 days. It would be interesting to know whether other observers have found any marked difference in the gestation time in the two sexes.

I am, Sir, yours faithfully,

ALICE I. ROUGHTON, M.R.C.S., L.R.C.P.

Cambridge, Feb. 9th, 1931.

PANEL AND CONTRACT PRACTICE

The Panel Patient on Holiday.

THE Cornwall Insurance Committee has refused to refund the sum of two guineas paid by a London bank clerk to a doctor whom he called in when on holiday in Cornwall. Although insured under the N.H.I. Acts, this patient asked the amount of the doctor's fees and paid it by drawing a cheque in a book which he had under his pillow. He gave no indication whatever that he was an insured person and desired to be treated as such; on returning to London, however, he claimed a refund. The medical service subcommittee is, however, determined to put an end to this practice of insured holiday-makers receiving treatment as private patients by misleading the insurance practitioner. Dr. W. Leslie was able to strengthen the committee in its decision by telling them that there were more cases of this sort in the county than came before them. It seemed to be the idea of the Londoner that he would get better attention as a private than as an insured patient; on behalf of the medical profession he rebutted this idea. On the other hand it was annoying to a medical man, after attending a person for a considerable time and sending in an account, to be told "I am on the panel." In a great number of cases the doctor said nothing and withdrew his account; but this case was too flagrant. The name of the man who purposely withheld the information that he was an insured person is not given in the press report. This is one of the cases, we think, in which a little publicity might be useful.

Changing the Doctor.

At a meeting of the Brighton Insurance Committee held on Jan. 22nd, a proposal to amend the medical benefit regulations, so as to require an insured person to give not less than one month's notice of his desire to change his doctor, came up for discussion. It was reported that the Middlesex Insurance Committee favoured the proposal, while the Barrow Insurance Committee thought that no change was necessary. The Brighton committee resolved unanimously to adhere to the principle of the right of an insured person to change his doctor at any time and without formality, Dr. E. F. Fothergill remarking that the suggested change was quite contrary to the wishes of the medical profession. At a meeting of the Bristol Insurance Committee held on Feb. 2nd it was unanimously decided that insurance practice should conform as closely as possible to private practice, and that no further limitation or restriction of the rights of insured persons to change their insurance practitioner was necessary or expedient. The Coventry Insurance Committee also adopted a similar recommendation of its medical benefit subcommittee, with a remark that the existing interposition of a fortnight's delay before deciding to effect a change is efficacious in checking transfers.

OBITUARY

ALEXANDER G. R. FOULERTON, O.B.E., F.R.C.S. Eng.,

CONSULTING MEDICAL OFFICER OF HEALTH, EAST SUSSEX.

Alexander Grant Russell Foulerton, who died after only a few days illness on Monday, Feb. 2nd, was born at Exeter in 1863, being the eldest son of Capt. Alexander Foulerton of the Indian Navy. He received his general education at the Kensington School and joined the medical school of St. Bartholomew's Hospital taking the English double qualifications in 1885. He filled residential appointments of various sorts and obtained the F.C.S. and the D.P.H. Camb. in 1893 and the F.R.C.S. in 1895, by which time he had become deeply interested in the comparatively new science of bacteriology, which he studied at St. George's Hospital. He was appointed assistant bacteriologist and gave lectures on Hygiene at the British Institute of Preventive Medicine (now the Lister Institute) during 1897-98. During that time and subsequently he worked at the pathological changes produced in animals by inoculation of various species of Blastomyces, especially *Saccharomyces tumefaciens*. These researches were published in the *Journal of Pathology and Bacteriology* in 1900, after he had become Director of the Public Health and Clinical Laboratories at the Middlesex Hospital. He also made a long and careful study of the different species of streptothrix and the part which they played in human infections. He wrote the article on this subject in Allbutt and Rolleston's System, and in his Milroy lectures delivered before the Royal College of Physicians of London, in 1910, he expressed his views, developed during the investigation of 53 cases from which he obtained cultures, and recorded 25 further cases in 1913 in THE LANCET, i., 381. This study led him to the opinion that human infections with streptothrix were not rarely erroneously diagnosed as tuberculosis on account of the resemblance of the two micro-organisms in the sputum and other discharges. As evidence of this he cited 14 human cases which were considered during life as tuberculous disease of the lungs, but from which he isolated a streptothrix, and whose infection he believed to be due to this organism and not to *B. tuberculosis*. He also stressed the close affinity of these two organisms. His views on human streptothricoses have not been generally accepted, but the recent work by Dr. H. H. Scott has shown how closely the two infections may be associated in some lower animals.

MR. ALEXANDER FOULERTON.

[Photograph by Elliott & Fry.

In 1899, having been for a time pathologist and bacteriologist to the Chelsea Hospital for Women, he was appointed lecturer on public health and bacteriologist at the Middlesex Hospital, where he did much enthusiastic work under considerable difficulties arising mainly out of the circumstances of the time. For when Foulerton was imported to the Middlesex Hospital, the official relations of a bacteriologist to the general pathological department of the big institutions were not defined, and the establishment of a proper organisation was hardly recognised at the Middlesex which in this respect resembled many of the other big teaching schools at that date. Foulerton's work, which was not always assisted by a certain combative spirit, was strenuous; he was unsparing of himself as his contemporaries at Middlesex remember; he was always willing to help others, and to his fixity of purpose and organising capacity Middlesex owed the conception of the pathological department now established by the generosity of Sir John Bland-Sutton. For four years, from 1900 to 1904, Foulerton was in charge of the Cancer Research Laboratory at Middlesex Hospital when Dr. Lazarus-Barlow became Director of the Department. During part of this period he was demonstrator of biological chemistry at the Lister Institute, while in 1902 he added to his responsibilities the duties of assistant and, later, chief medical officer to the East Sussex County Council, and also those of lecturer on public health at University College, London, and at the London School of Medicine for Women.

For 26 years—namely, until his retirement in April, 1928—Foulerton was actively engaged in the public health work of East Sussex, and the following estimate of the way in which he discharged his duties has been confided to us by certain of his late colleagues: "The period of expansion in growth of the work of a County Public Health Department during the last 25 years provided ample scope for the fine administrative ability which proved to be such a marked characteristic of Mr. Foulerton. He was responsible for the origination and development of most of the important schemes which formed the foundation of the present activities of the Department. He carried them through their difficult stages and finally had the satisfaction of witnessing the success brought about by his untiring efforts. He was an extremely active worker. He used to sleep but five hours and rise early to work. He never spared himself in the carrying out of his duties, but though he seemed to be completely wrapped up in them he had a wide range of interests, literary, historical, and naval. The sound judgment always shown in the advice he gave in all details of the work will long be appreciated by those with whom he was in contact. His quick brain made him impatient of those who were slow to grasp what was clear in a flash to him and he was short with people who seemed to be making difficulties or proffering ill-founded accusations. His loyalty towards his fellow-workers will never be forgotten by those who had the privilege of being associated with him in the work of the Department. He never complained of work being ill-done. His effective rebuke was to do it himself and to mention the fact casually." In 1928 he retired with the post of honorary consulting medical officer.

Foulerton joined the R.A.M.C. shortly after the tbreak of war, and in November, 1915, proceeded France, and shortly afterwards took over charge of Chemical and Hygiene Laboratory at Boulogne, ere all food and other analyses in connexion with Army in France were carried out. He took a re in the numerous researches into the occurrence gas-gangrene, and advocated perborate to hinder ierobic infections. In April, 1917, he was sent ne to take charge of the Hygiene Department the R.A.M. College, which by then, had been ved to the University College Hospital, and remained as such until demobilised in April, 9. From the R.A.M. College come the following ainiscent words: "Foulerton was a man of very et personality with a charming character. As a cher, and in charge of the Hygiene Department the R.A.M.C., he had a great influence on his fellow rkers, and his extensive knowledge of bacteriology l hygiene was most valuable and of great assistance the Hygiene Department of the Army at a very ical period." He was made an Officer of the itish Empire in recognition of his valuable services the Army.

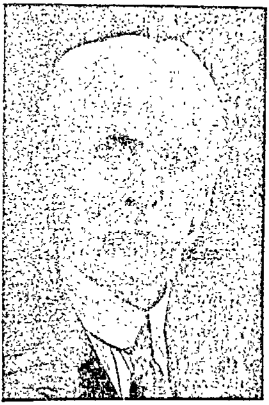
Foulerton's contributions to literature were always practical value. In addition to the papers already ntioned, he made in the *Journal of Pathology and cteriology*, in 1921, some informing observations arsenobenzol in acute yellow atrophy of the liver; The Lancet he wrote at different times on the thology of glanders and on chemical preservatives food; and in the *Journal of Pathology and cteriology* he made an inquiry into the infection wild London rats with *Spirochæta icterohæmorrhagiæ*.

To one other of Foulerton's activities particular ention must be drawn, and that is his work as ancial secretary to the London and Counties dical Protection Society. The Society was formed 1892, and Foulerton became a member that year, d in 1893 was appointed one of the honorary ditors, some 12 years later becoming financial retary. Dr. Fegen, chairman of the Society writes: I have been intimately acquainted with Foulerton practically the whole of the time the Society s been in existence, and he had the interests the profession at heart to such an extent that he voted a tremendous amount of time to the work the Society. His advice, particularly on financial tters, was always sound, the financial condition the Society being evidence of the care that he has ken in regard to everything relating to its economical rking. Except for a period during the war, he was ntinually in touch with our business. The Society s lost a very valuable officer, the Council a colleague o could be ill-spared, and all members of the edical profession one ever ready with friendship d practical assistance."

r GARROD THOMAS, M.D. Edin., LL.D. Wales.

Sir Garrod Thomas, who died at his home in ewport on Feb. 6th, was founder of the Royal went Hospital, and perhaps the best-known and st-loved citizen of that town.

Abraham Garrod Thomas was born on April 5th, 53, at Panteryrod, a Cardiganshire farm near berayron, the youngest of the five sons of Lewis homas. There was enough to eat although nothing spare on the farm, and the cadet, after his schooling t Milford Haven, could not have entered a profession nless the opportunity had arisen of becoming apprenced to Dr. George Griffith, of Milford. Three years ter, at the age of 18, he went to Edinburgh University and began an academic career of brilliance, taking honours in every subject, and the highest distinction in midwifery and medicine. After graduating in 1876 he spent some time at St. Bartholomew's Hospital, London, and visited special clinics in Berlin and Vienna before returning to settle in Newport in 1877. In the following year he took his M.D. Edin. and built up a large general practice from which he retired in 1912. At the time of his qualification the only hospital in Newport was the Infirmary, regarded as a hotbed of sepsis by one who had recently come from Edinburgh with Listerian notions. Thomas, who succeeded Dr. Benjamin Davies as honorary physician to the infirmary in 1895, did not rest until a new hospital, named according to his wish, was opened on a new site in Cardiff-road in the year 1901, £5000 of the money having been contributed by his wife and himself. Three years later, on the death of Mr. Edwin Webber, he succeeded to the chairmanship of the hospital, which he held until his death. Last May he was presented with his portrait bust in bronze by Mr. L. S. Merrifield, in order that the hospital might have a permanent memorial (as the legend put it) of what the sick and injured owed to his inspiration, labours, and gifts.



SIR GARROD THOMAS.

But Thomas's medical activities were only a small part of the way in which he construed his citizenship. He was a member of the Newport town council from 1889 to 1897, retiring short of the mayoralty on account of pressure of professional work. He was a member of the Newport school board for three years, and after retiring remained a governor of the intermediate schools. In the University of Wales he was a member of the court of governors, and of the council of the University College of South Wales and Monmouthshire, and junior vice-president of the University College of Aberystwyth. He was justice of the peace for the counties of Cardigan and Monmouth, a deputy lieutenant for Monmouthshire, and for a time high sheriff of Cardiganshire. A lifelong Liberal, he was often approached to stand for the constituency, and succeeded to Lord Treowen's seat in the House of Commons for a brief period before the general election of 1918. He was knighted in 1912. In religion he was attached to the Congregationalist body, and for many years an honorary deacon of the Victoria-road Church. In paying testimony to his life an old friend, the Rev. A. W. Anderson, said that Sir Garrod had been to him a standing illustration of the fact that honest doubt only strengthened a man's real faith; the epitaph which he suggested for his own tombstone was:

"That in me which questions is reconciled with that which kneels."

Sir Garrod was active in many spheres of business life. He was one of the original directors of the *South Wales Argus*, of which he became chief proprietor, and he ensured its remaining an independent paper to the day of his death. He was chairman of the Welsh Insurance Corporation and the Emlyn Anthracite Collieries, as well as of a number of public utility services. His only recreation was travel, and he was on the *Delhi* with his wife and daughter in December, 1911, when the vessel was wrecked on the coast of Morocco. He broke both bones of the right leg above the ankle, and although he did not reach shore for 48 hours, and then had to travel 15 miles by mule to Tangier, he made a perfect recovery and paid a prolonged visit to Algiers.

Sir Garrod married in 1879 Eleanor Richards, a daughter of his own shire, and her sudden death at the end of 1926 was a blow from which he never recovered. Although he made light of his growing disabilities—he called his rheumatism "poor man's gout"—his friends noticed the gradual failure of his powers, but he retained a cheerful and courageous activity to the last.

He leaves a son and two daughters.

GEORGE EDMONDSON BIRKETT, *M.C.*,

B.A. Camb., M.R.C.S. Eng.

NEWS of the death of Dr. G. E. Birkett, director of the Manchester and District Radium Institute, on Feb. 5th, after a very acute and short illness, came as a shock to his many friends. He was son of George Birkett, of Morecambe, where he was born on Nov. 26th, 1893, and was educated at Lancaster Grammar School and Trinity Hall, Cambridge, graduating in 1915. He served as surgeon probationer in the navy until he received his orders to qualify in medicine, when he joined the Manchester medical school and took the M.R.C.S. in 1917. He joined the R.A.M.C. and was sent to France, but in September, 1918, whilst rescuing a wounded man, he received a bullet wound in the spine injuring the cauda equina. For this act of bravery he was awarded the Military Cross. After a preliminary operation to remove pressure on the spinal nerves he was sent to St. Thomas's Hospital, where he spent 14 months. Although sufficiently restored to return to Manchester and act as house physician he was obliged to wear an artificial appliance to enable him to walk at all, and remained subject to severe neuralgic pains. He became demonstrator in pathology in the University of Manchester and its registrar at the Royal Infirmary in 1921. Three years later he was offered the post of pathologist to the Radium Institute, finding the work so congenial that in 1925, when the director was given leave of absence owing to ill-health, he took over his duties, and continued in charge until 1930, when arrangements were made so that he could take rooms and practise as a radium consultant. His advice was widely sought, and he was appointed consultant in the radium treatment of cancer to the hospital staffs of Chester, Wrexham, and Bangor, and a member of the advisory committee of Mount Vernon Hospital.

Birkett was an excellent teacher both for students and practitioners. He was thoroughly conversant with the physics of radium and had clear and definite ideas of its therapeutic uses and limits. He kept himself well informed of the work of continental institutes by periodic visits to them. He was a member of the Manchester Committee on C and of its joint committee on research with the University which was concerned chiefly with causation of mule-spinner's cancer; at the Radium Institute he saw many cases of epithelioma of skin occurring in operatives working in the local spinning mills. He wrote on several aspects of his work, one of his most important papers dealing with the changes met with in the blood of radium workers. His best known work was done on cancer of the mouth and tongue; an article which he published three years ago our own columns set out quite simply remarkable results which he had then obtai brought carefully into relation with microscop appearances. His monograph on "Radium Thera its Principles and Practice," was just compl when his health finally failed. Naturally played a prominent part in making arrangeme for the use of radium allotted to Manchester by th Radium Commission, and had just begun to tr cases of cancer in the beds in the Royal Infirma which were allotted as an essential part of the sche

DR. BIRKETT.

Prof. G. E. Gask writes: "The country ow much to Dr. Birkett for the interest and enthusias he showed in the treatment of malignant disease b radium, and especially in the treatment of epith lioma of the tongue by radium. It is largely ow to his work that surgeons in this country were co vinced that there was something in this form o treatment. Those who were sufficiently interes to make a journey to Manchester and visit th Radium Institute were able to see for themsel large numbers of patients who had had epithelio of the tongue which had been treated by radium a which had disappeared. This work began in qui a small way when the Medical Research Cou loaned a certain amount of radium for the purpo of research to Manchester. This work was conduct by Birkett, and it developed slowly from a depa ment containing only a few patients to a very lar concern. It was recognised by the Radium Co mission as one of the most important in the countr This is all the more interesting when one rememb that Dr. Birkett suffered from a gunshot wound the spine during the war, which left him permanent partially disabled. In spite of his disability he co tinued to work with an enthusiasm which was mo inspiring, and kept one in almost reverent admir tion. His early death is greatly to be regrett not only on account of his charming personality, bu

account of the loss to the research in the treat-
ent of cancer by radium." And one of his Man-
ester colleagues adds: "The outstanding impres-
n which Birkett's personality must leave on all
o were associated with him, was that of indomit-
le courage. He never took the easy way, nor
ared himself in the effort to achieve a high scientific
ndard, and to ensure for his patients the best attainable result. As in his work, so in his play; one has a vivid recollection of his pride in a round of golf over a difficult course, with a score which few of his physically sound colleagues could emulate."

Dr. Birkett married Miss May Thomas, daughter of the late Major A. W. Thomas, R.E., of Ayton. She survives him with two children.

MEDICAL NEWS

iversity of Cambridge.

On Feb. 7th the following degrees were conferred:—

M.D.—S. D. Sturton (by proxy).

M.B. and B.Chir.—W. G. Oakley and T. C. Stevenson.

M.B.—A. W. Williams.

yal Colleges of Physicians and Surgeons of England.

At the Final Examination of the Conjoint Board, held
m Jan. 12th to Feb. 4th, the following candidates were
proved in the undermentioned subjects, but have not
mpleted the whole of the Final Examination entitling
em to diplomas:—

Pathology.—M. W. Allen, Middlesex; F. C. Angior, Liverpool;
arjory Archer, Westminster; A. Ascher, King's Coll.;
argaret M. Baddeley, Liverpool; J. S. Batchelor, Guy's;
E. Burrows, Cambridge and St. Bart.'s; H. G. H. Butcher,
mbridge and Manchester; W. I. Card, St. Thomas's; G. N.
rrell, Guy's; L. P. B. Chamberlain, St. Bart.'s; I. Cohen,
ing's Coll.; C. P. Collins, Univ. Coll.; R. A. F. Creet, St.
omas's; J. F. Dales, Univ. Coll.; T. F. Davies, Guy's;
E. D. De Silva, Univ. Coll.; H. Edwards, Guy's; L. P. J.
ans, Cambridge and St. Bart.'s; S. G. French, King's Coll.;
Goide, Charing Cross; I. Gold and H. Goldenberg, London;
J. B. Goldsmith, Middlesex; D. G. Gower, Cambridge and
estminster; Hilary S. M. Hadaway, Royal Free; H. T.
alper, St. Bart.'s; O. C. Hamilton-Jones, Liverpool; F.
llmy, Durham; C. B. Hinkley, St. Thomas's; J. Howell,
uy's; J. A. James, Wales and Charing Cross; D. E. V.
nes, King's Coll.; A. Kahan, St. Thomas's; C. A. Keane,
Bart.'s; M. M. Landau, Middlesex; R. C. Langford,
mbridge and St. Thomas's; A. M. P. Laurent, Univ. Coll.;
D. Low and J. M. Low, St. Mary's; G. A. M. Madel,
iddlesex; M. T. Maung, Rangoon; I. D. Monger, Charing
ross; A. K. Monro, Cambridge and London; L. G. Norman,
niv. Coll.; C. V. Oldroyd, Manchester; H. Owen, St. Mary's;
McI. Paton, St. Thomas's; G. F. Petty, St. Bart.'s; D. R.
rem, King's Coll.; G. R. C. Rayner, Guy's; L. Rees, St.
homas's; J. Reeve, Westminster; G. O. S. Reid, St. Mary's;
F. Richards, Cambridge and St. Bart.'s; P. Rosenfeld,
t. Bart.'s; I. N. Samuel, Middlesex; P. G. Scott, St. Bart.'s;
W. V. Sheldon, Guy's; H. Simmons, St. Bart.'s; H. M.
nger, King's Coll.; R. G. W. Southern, St. Thomas's;
W. G. Staunton, St. Bart.'s; Joan W. Stelfox and J. L.
reneman, Liverpool; A. B. Waters, Cambridge and St. Bart.'s;
velyn A. M. White, Univ. Coll.; R. G. Wilbond, Bristol;
W. Wilkins, Birmingham; Eva M. M. Willett, Westminster,
I. A. Williams, Liverpool; A. L. Wingfield, St. Thomas's;
d C. E. R. Wood, Cambridge and Guy's.

Medicine.—Doris Ascough, Manchester; P. S. Bassalvi,
I.B. Punjab, Middlesex; R. J. V. Battle, Cambridge and
t. Thomas's; A. J. W. Beard, St. Bart.'s; E. H. S. Bebb,
ondon; Jessie G. Bellilios, King's Coll.; D. R. Bharucha,
I.B. Bombay, St. Bart.'s; H. G. H. Butcher, Cambridge and
anchester; G. T. Cook, Cambridge and King's Coll.; K. M.
ooper, M.B. Bombay, Royal Free; J. H. Ferguson, Cape,
xford and King's Coll.; T. N. Gledhill, Oxford and West-
inster; J. T. Griffiths, Univ. Coll.; A. E. T. Hart, Cambridge
nd St. Thomas's; B. T. W. Harvey, London; A. C. Haupt-
eisch, Cape and Guy's; J. M. Holmes, Leeds; F. J. V.
aensch, St. Bart.'s; N. M. James, King's Coll.; C. A. Keane,
t. Bart.'s; H. de B. Kempthorne, Oxford and St. Thomas's;
adeline E. E. Knowlson, Westminster; J. S. Knox, St. Bart.'s;
C. Langford, Cambridge and St. Thomas's; J. J. H. Lowe,
urham; Sosa Matthew, M.B. Punjab, Royal Free; S. G.
leanley, Leeds; A. K. Monro, Cambridge and London;
J. Morris, Liverpool; B. S. Nanjiani, M.B. Bombay, Bombay;
H. Newns, King's Coll.; T. F. B. Noble, London; J. E. A.
Connell, St. Bart.'s; Catherine O'Connor, Manchester;
I. J. O'Loughlin, M.B. Vict., Manchester; H. A. Phillips,
D. Melb., Melbourne; W. M. Priest, Univ. Coll.; A. G.
anders, St. Thomas's; P. C. Sanyal, M.B. Calcutta, Middlesex,
S. Southam, Guy's; F. R. Staub, Leeds; N. S. Taggart;
anchester; Marion E. Townsend, Royal Free; Eva M. M.
Villett, Westminster; and C. Wilson, London.

Surgery.—R. Ahmad, Punjab and London; E. Anfilogoff,
London; P. T. Ashby, Cambridge and London; R. Baker,
Leeds; J. S. Barker, Cambridge and St. Thomas's; G. Barwell
and J. S. Batchelor, Guy's; A. S. Baxi, Punjab and London;
W. D. Bell, Cambridge and St. Bart.'s; W. A. C. K. N. Bruce,
Cambridge and St. Thomas's; A. H. Bulleid, Cambridge and
London; P. H. Charlton, Middlesex; S. Cimmering, St.
Bart.'s; E. F. Claridge, London; H. W. Cowen, Cambridge
and Univ. Coll.; E. J. Currant, Cambridge and London;
H. L. N. Davies, Birmingham; J. O. F. Davies, Middlesex;
C. J. N. Davis, Bristol; W. De Lacey, London; E. StJ. C. Emerson, St. Mary's; G. A. Emmerson, Cambridge and St. Mary's; D. Erskine, Guy's; J. H. Ferguson, Oxford and King's Coll.; B. Fine, London; J. Finer, Middlesex; A. C. Frazer, St. Mary's; J. W. O. Freeth, St. Bart.'s; V. Glass, Univ. Coll.; T. N. Gledhill, Oxford and Westminster; P. W. Godfrey, Leeds; S. E. Godwin, St. Bart.'s; E. A. Gudgeon, St. George's; H. F. Green, Cambridge and St. Bart.'s; Hilary S. M. Hadaway, Royal Free; A. E. T. Hart, Cambridge and St. Thomas's; K. Hazell, King's Coll.; C. B. Hinkley, St. Thomas's; E. T. Hudson, Manchester and Charing Cross; J. H. Hunt, Oxford and St. Bart.'s; C. D. P. Jones, Univ. Coll.; I. O. Jones, Guy's; A. Kahan, St. Thomas's; D. H. Klugman and G. F. Lashmore, Guy's; D. L. Lewis, Cambridge and St. George's; J. W. S. H. Lindahl, Cambridge and St. Thomas's; A. B. MacEwan, Cambridge and London; J. W. McLaren, Cambridge and St. Thomas's; Halle Marsten, Charing Cross; M. H. Masina, Cambridge and St. Bart.'s; W. H. Mason, Middlesex; J. M. Matthew, Cambridge and King's Coll.; H. K. G. Nash, Cambridge and Middlesex; W. McN. Niblock and R. Palmer, Cambridge and King's Coll.; J. L. Parker and W. R. Parkes, Cambridge and St. Thomas's; R. McI. Paton, St. Thomas's; H. A. Phillips, M.D. Melb., Melbourne; D. R. Prem, Bombay and King's Coll.; L. Rees, St. Thomas's; G. F. Rees-Jones, Univ. Coll.; R. V. C. Richards, Bristol; J. C. Roberts, St. Bart.'s; R. S. Sandhu, M.B. Punjab, Lahore; E. M. Sastry, Andhra; J. Scholefield, Leeds; A. Segil, Guy's; J. H. Shakespeare, Cambridge and St. George's; Eileen M. M. Shaw, L.M.S.S.A. Lond., Westminster; H. Singh, M.B. Punjab, and D. A. Smith, St. Bart.'s; R. E. G. Smith, Birmingham; J. H. Spence, Cambridge and St. Thomas's; Violet Spiller, M.D. Geneva, Royal Free; T. C. Stamp, Cambridge and St. Bart.'s; J. T. C. Taylor, St. Bart.'s; H. S. Tibbits, Cambridge and Birmingham; W. F. Townsend-Coles, London; D. S. Valentine, St. Thomas's; E. D. Ward, Cambridge and St. Thomas's; G. Wells, St. Bart.'s; J. C. Wharton, Guy's; Evelyn A. M. White, Univ. Coll.; R. B. D. Wright, St. Mary's; and J. Zeitlin, London.

Midwifery.—M. W. Allen, Middlesex; E. R. Andrews, Univ. Coll.; E. Anfilogoff, London; G. Ashton, Univ. Coll.; H. C. Bamford, St. Bart.'s; S. J. Bellgard, St. Mary's; E. A. R. Berkley and W. H. Bradbeer, Guy's; Eleanor H. Brooks, M.B. Punjab, Royal Free; W. A. C. K. N. Bruce, Cambridge and St. Thomas's; T. E. Burrows, Cambridge and St. Bart.'s; H. G. H. Butcher, Cambridge and Manchester; W. I. Card, St. Thomas's; G. N. Carrell, Guy's; E. F. Claridge, London; Barbara G. C. Clarke, R. C. Cohen, and C. P. Collins, Univ. Coll.; H. A. Constable, Guy's; A. B. Cook, St. Bart.'s; R. A. F. Creet, St. Thomas's; G. J. Cunningham, St. Bart.'s; J. F. Dales, Univ. Coll.; H. W. D'Arcy, Middlesex; C. J. N. Davis, Bristol; N. E. D. De Silva, Univ. Coll.; T. H. Dias, King's Coll.; P. A. Diemer, St. Mary's; L. Freeman, St. Bart.'s; S. G. French, King's Coll.; M. J. Garber, Guy's; N. A. Gillespie, Oxford and London; J. H. L. Gilmore, Cambridge and St. Thomas's; S. Golde, Charing Cross; I. Gold, London; A. J. B. Goldsmith, Middlesex; W. H. Greany, Oxford and Guy's; H. F. Green and L. E. Green, St. Bart.'s; G. W. Hall-Smith, Cambridge and Guy's; B. T. W. Harvey, London; Florence D. Hawes, Royal Free; O. L. Hay-Shunker, St. Bart.'s; N. Heath, Westminster; W. N. Hine, Middlesex; L. A. Hiscock, St. Bart.'s; P. A. Hubbard, Univ. Coll.; S. V. Humphries, Cambridge and St. Thomas's; J. H. Hunt, Oxford and St. Bart.'s; S. S. Jaikaran, Cambridge and St. Thomas's; J. E. Jenkyn-Thomas, St. Bart.'s; Annie L. Jones, Univ. Coll.; H. de B. Kempthorne, Oxford and St. Thomas's; M. Kosloff, Guy's; Janet Y. Laidlaw, Royal Free; N. R. C. Lansdell, King's Coll.; A. M. P. Laurent, Univ. Coll.; A. D. Low and J. M. Low, St. Mary's; J. W. McLaren, St. Thomas's; R. W. McNabb, Guy's; J. G. Madden and G. A. M. Madel, Middlesex; R. L. Mansi, St. Bart.'s; R. M. Marshall, Oxford and St. Bart.'s; S. O. Massey, Middlesex; J. M. Matthew, Cambridge and King's Coll.; Sosa Matthew, M.B. Punjab, Royal Free; C. F. Mayo-Smith, St. George's; T. F. Miles, St. Thomas's; A. Miller and I. Moshinsky, Guy's; D. H. Murphy, Sheffield; R. W. C. Murray, Cambridge and Birmingham; W. H. Mylechreest, Cambridge and St. Thomas's; P. G. A. Nambiar, Royal Free; H. K. G. Nash, Cambridge and Middlesex; L. G. Norman, Univ. Coll.; N. C. O'Bryne, St. Thomas's; M. Oldfield, Leeds; H. J. O'Loughlin, M.B. Manch., Manchester; A. Papert, St. Bart.'s; W. W. Parry, Guy's; G. T. Partridge, Cambridge and St. Bart.'s; G. F. Petty, St. Bart.'s; T. J. Phillips and G. F. Rees-Jones, Univ. Coll.; C. H. Rogerson, Guy's; S. Rosenbloom, Leeds; P. Rosenfeld, St. Bart.'s; C. Rutter, Guy's; R. B. Scott, Oxford and St. Bart.'s; E. Sharp, Guy's; E. W. H. Shawcross, Cambridge and King's Coll.; D. A. Smith, St. Bart.'s; R. B. F. U. Somers, Birmingham; P. Q. M. Spaight, St. Bart.'s; T. C. Stamp and G. W. Thomas, Cambridge and St. Bart.'s; W. P. Thomas, Univ. Coll.; H. S. Tibbits, Cambridge and Birmingham; W. F. Townsend-Coles, London; A. B. Waters, Cambridge and St. Bart.'s; G. Wells, St. Bart.'s; Shirley E. Whitaker, Univ. Coll.; E. W. M. Williams, Guy's; H. G. Williams, St. Thomas's; L. E. Williams, Univ. Coll.; Mary J. Wilmers, King's Coll.; J. I. Wilson, Univ. Coll.; A. L. Wingfield, St. Thomas's; S. L. Wright, Univ. Coll.; and A. H. Zair, Cambridge and Birmingham.

Royal College of Physicians of London.

On Feb. 5th the College conferred licences to practise physic upon 29 candidates (27 men and 2 women) who have passed the final examination of the Conjoint Board and have compiled with the by-laws of the College. These candidates had not completed their examinations in time for the College meeting on Jan. 29th. The following are the names and medical schools of the successful candidates:—

Khaia Alman-Vtcherachnia, Kiev and Royal Free; W. Aukin, Univ. Coll.; W. S. Baxter, St. Bart.'s; H. W. Benham, Univ. Coll.; A. I. P. Brown, London; A. L. Cliner, P. Cohen, M. K. Cusack, D. M. Dean, W. F. George, J. B. Great Rex, and W. H. Hargreaves, St. Bar.t's; R. Herring, St. Mary's; D. T. Ishmael and B. W. Knight, St. Bart.'s; G. A. M. Lintott, Guy's; Muriel H. E. Long, King's Coll.; D. G. Macdonald, Cambridge and London; W. F. McGladdery, St. Bart.'s; G. D. McLean, St. Thomas's; G. W. May, London; D. Nagarajan, L.M.S., Madras Univ.; C. E. S. Oxley, St. Thomas's; H. J. C. Page, St. Mary's; C. F. Price, Univ. Coll.; E. T. Renbom, St. Bart.'s; B. Rubinsky, London; H. Silverberg, Middlesex, and D. O. C. Simpson, London.

Royal College of Physicians of Edinburgh.

A quarterly meeting of the College was held on Feb. 3rd with Sir Norman Walker, the President, in the chair. Dr. William Archibald Mein (Bournemouth), Dr. Anges Rose Macgregor (Edinburgh) and Dr. James Davidson (Edinburgh) were introduced and took their seats as Fellows. Dr. Ernest Watt (Edinburgh) and Dr. George Matheson Cullen (Edinburgh) were elected to the Fellowship. Dr. H. O. Elder received a certificate of qualification to lecture in Tuberculosis.

University of Durham.

At a meeting in Newcastle of the University of Durham College of Medicine Sir Arthur Sutherland promised £10,000 toward the equipment of a new dental hospital. Sir Arthur's offer will cover the entire cost of the scheme

British College of Obstetricians and Gynæcologists.

The quarterly meeting of the Council was held in London on Jan. 24th, with Prof. W. Blair Bell, the President, in the chair. The President handed over, in the name of his wife, the seal of the College, and from himself a set of dies for printing the arms of the College.—The report of the examination committee on a number of applications for membership of the college were adopted, and the recommendations of the Fellowship Committee regarding promotions from membership to the Fellowship were accepted.—Subcommittees were appointed to consider various matters connected with a maternity service for the country, and with the education of medical students in obstetrics and gynæcology.

British Medical Association.

Katherine Bishop Harman Prize, 1932.—The Council of the Association will consider an award of this prize, of the value of £80, in the year 1932. The prize is for the encouragement of study and research directed to the diminution and avoidance of the risks to health and life that are liable to arise in pregnancy and child-bearing. Within this sphere competitors are free to select the work they wish to present. All medical practitioners registered in the British Empire are eligible to compete. Should no essay be, in the opinion of the Council, of sufficient merit, no award will be made, but the prize will again be offered in the year following; in this event the money value will be increased. Each essay must be typewritten or printed in English. It must be distinguished by a motto, and accompanied by a sealed envelope marked with the same motto, and enclosing the candidate's name and address. Essays must reach the medical secretary (to whom inquiries may be addressed), British Medical Association House, Tavistock-square, W.C.1, not later tha Dec. 31st, 1931.

Middlemore Prize, 1932.—This prize, a cheque for £50 and a certificate, is awarded for the best essay or work on any subject which the Council of the Association may from time to time select in any department of ophthalmic medicine or surgery. The award in 1932 will be for the best essay on Sympathetic Ophthalmia before and after 1914. Essays submitted in competition must reach the medical secretary not later than Dec. 31st, 1931. The precautions for preserving anonymity are the same as those enjoined for the Katherine Bishop Harman Prize. In the event of no essay being of sufficient merit, the prize will not be awarded in 1932.

Chadwick Public Lectures.

Sir William Collins will take the chair at a meeting at 90, Buckingham Palace-road, London, S.W., on Tuesday, Feb. 24th, at 8 P.M., when Mr. E. A. Elsby will speak on Silicosis Prevention Methods. Mr. Elsby has been studying this subject as Chadwick travelling scholar for 1929-30. Among lectures in the spring programme is one by Prof. Major Greenwood, F.R.S., on Nerves and the Public Health. The offices of the Chadwick Trust are at 204, Abbey House, Westminster, S.W.

Fellowship of Medicine and Post-graduate Medical Association.

Arrangements for the coming week will be found in our Medical Diary. A special all-day course in diseases of children will be given at the Queen's Hospital for Children, Bethnal Green, from Feb. 16th to 28th. Courses will be given in March at the West End Hospital for Nervous Diseases, at St. John's Hospital (dermatology), at Bethlem Royal Hospital, at the Royal Waterloo Hospital (medicine, surgery, and gynaecology), and at the Royal National Orthopaedic Hospital. Syllabuses are now being prepared, and copies will be sent on application to the Fellowship at 1, Wimpole-street, London, W. 1. Courses in venereal disease are available at the Royal Free Hospital for women graduates only.

King Edward VII. Hospital, Windsor.

Sir Joseph Skevington, the senior surgeon, and his brother Major Skevington, have equipped a new operating theatre in memory of their sister, who for many years took a keen interest in this hospital. Four new wards and a nurses' hostel have been opened, the total cost, with the operating theatre being about £55,000, of which all but £6000 has been raised. The hospital now has three operating theatres.

Hospital Costs.

The average cost of each in-patient (4600) of Halifax Royal Infirmary last year was £5 14s. 3d., as against £6 5s. 11d. in 1929. The average cost per occupied bed per annum was £124 11s. 1d., as against £130 1s. 2d. in 1929. —The average stay last year of the 214 in-patients of Okehampton Cottage Hospital was 19·36 days, and the average cost 12s. per day.

Private Wards at Harrow Hospital.

Harrow Hospital is providing private wards for subscribers whose incomes do not exceed £750 a year. A single person will pay 1 guinea a year; a married couple with children will pay 2 guineas. The free treatment will include hospital charges and doctors' fees, but not consultants' fees, operations, or special nurses.

Northamptonshire Hospitals.

The 187th annual report of Northampton General Hospital which covers the year ending August 31st, 1930, shows that there were 4147 in-patients, of whom 247 were private patients, whose average stay was 10 days. They cost £8 1s. 7d. each, an increase on the preceding year of 7s. 2d.; the average cost per bed per day was 9s. 1d. The out-patients numbered 18,122, an increase of nearly 1250; they cost 7s. 1d. each. The income of £42,884 included £7750 from the Northamptonshire Hospital Week Committee and a similar sum from the Northampton and County Hospital and Convalescent Fund, an aggregate increase of £4250.—The Northamptonshire public assistance committee has recommended that the county council should subscribe to various hospitals in respect of the hospital treatment of persons in receipt of poor relief, the amount of the subscriptions to equal the actual cost of treatment plus an addition of 20 per cent. as remuneration of the honorary medical staff in respect of their attendance on the cases. Payments are also to be made to various voluntary organisations.

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	Six Months	1	5	0
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For complete scale of advertisement charges apply to THE MANAGER.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

A Bill to Regulate Osteopathy.

ON Feb. 11th, at the instance of an organisation lled The Osteopathic Defence League, Mr. W. M. lamson, the Labour Member for Cannock, is to k leave to introduce a Bill entitled the Registration d Regulation of Osteopathy Bill. The aim of is Bill, as described by its sponsors, is "to place osteopathic practitioner who has the necessary ucational attainments and practical competence on an equality with members of the orthodox dical profession." It is claimed that the Bill is pported by a petition signed by nearly 15,000 ople.

HOUSE OF LORDS.

TUESDAY, FEB. 10TH.

PURE MILK.

Viscount **ASTOR** called attention to the needs of dairy industry and to the necessity for developing demand for the supply of British milk. He said at milk was not merely important to the farming lustry but was a most valuable food for children. ere was tremendous under-consumption of milk in is country. To increase demand there must be blicity and propaganda, the cost of milk must be luced, and its hygienic quality and cleanliness proved. At present only £10,000 was spent annually advertising fresh milk, while £250,000 was spent advertising patent foods. The Government should something to stimulate the giving of milk to ildren in the elementary schools. That would lp the dairy industry and improve the health of children. The Government should also assist e publicity movement as a whole. The price of lk to the consumer could be reduced if farmers uld adopt more business-like methods. If the tion was urged to drink more milk there must be guarantee that the milk which was offered to the blic was reasonably safe and clean. It was relaely easy to produce cleanly, with clean methods milking and handling, and it would not cost much. simplifying the classification of milk the public uld be given greater confidence, and the consumpn of milk would be stimulated.

Lord **MOYNIHAN** supported Lord Astor's plea for larger supply of milk, but, he said, he did so with rtain qualifications. Milk was rarely pure and was ten contaminated, with the inevitable result that caused a number of diseases. The supply of milk, erefore, was not the only problem. It was only ien there was an acute outbreak of disease that e mind of the people was stimulated. Every year ,000 people died from cancer; 100 people died ery day from tuberculosis; and £250,000 was ent every day in this country alone on the treatent of tuberculosis, a large proportion of which is preventable. The milk problem was not only an ricultural problem, but a human problem. Of the 250,000 cows in this country giving milk, over 000,000 were suffering from tuberculosis. It was o, in large measure, a financial problem. What is to be done? A milk supply was very necessary. ere they to slaughter all the cows affected by tuberlosis? If that were done it would be ineffective, cept in so far as the immediate present was conrned. To immunise the animals would be a matter great difficulty and uncertainty. The problem to considered was whether the present conditions of r milk supply could be improved. One of the first ethods was by boiling, which would destroy all ganisms. That method was easily available, and st virtually nothing. Every drop of milk that was ken into his house was boiled. It was true that ere were certain disadvantages in boiling, but the tritive value of milk, contrary to the general opinion, was not diminished by boiling. The vitamins were destroyed, however, and from the point of view of general consumption there was no doubt that the boiling of milk reduced its value. The second method that could be adopted to make ordinary milk fit for human consumption was pasteurisation. Ninety per cent. of the milk in London and Manchester was pasteurised. A great deal depended on the human material used in the process of pasteurisation. About a year ago an article appeared in *The Times* asserting, on very competent authority, that pasteurisation had failed, in the opinion of the medical men in London. But pasteurisation was perfectly satisfactory; it destroyed bacilli. It was essential that the machinery of pasteurisation should be constantly supervised, and that the greatest possible bacteriological control should be exercised at every stage. It was most desirable that the milk provided for pasteurisation should be as pure as possible. There was no doubt that an increased supply of milk was necessary and that tainted milk could be made fit for human consumption in a variety of ways. Some further inquiry than any that had yet been made into the question of the milk supply was necessary, and it might be well if the Government would set up a Royal Commission to reconstruct all the knowledge which had so far been obtained about the problem. The great ideal was that they should have a milk supply for the people of this country which it was possible for them to drink without those grave risks to health which had been so profitable to members of his own profession.

The Earl of **RADNOR** said that there were no figures to show the amount of disease prevented by the consumption of milk. Milk was a very necessary part of the child's diet, and if it were withdrawn it was probable that the resultant diseases would be far worse than any diseases actually traceable to the consumption of tainted milk.

The Earl of **IVEAGH** suggested that the Government should set up a committee of inquiry to bring up to date all the information available about milk. If they believed all that Lord Moynihan said, then they would never drink a drop of milk again, at least unless it was boiled. At this moment scientific opinion on milk was extremely divided. Such an inquiry should consider whether the evidence was for or against pasteurisation of milk.

The Earl of **ONSLOW** said that the first thing to be done to increase the consumption of milk was to reduce the costs of production. If anything could be done to simplify the grading of milk it would be a great advantage.

Earl **DE LA WARR** (Parliamentary Secretary to the Ministry of Agriculture) said he could not feel that the medical profession were entirely free from blame in this matter. One of the reasons why more clean milk was not produced in this country was the lack of demand. A great deal of Grade A milk to-day was sold as ordinary milk at ordinary prices. If the medical profession would talk a little less about dirty milk, and do a little more to encourage the buying of clean milk which was already in the market, they would be of more use to the nation as a whole and to the agricultural industry. They would also help the Government if they would make up their minds as to what they really felt about milk. Before the medical profession came down on the farming industry for not taking certain steps about milk, they should really make up their minds what they wanted the farmers to do.

Lord **MOYNIHAN**: We want you to produce pure milk. Until that is done we suggest that all milk should be pasteurised.

Earl **DE LA WARR**, continuing, said that he agreed that grade designations of milk were in an unsatisfactory state, but it was a very difficult problem to solve while there was so much disagreement in the industry. If the Minister of Agriculture could have some assurance of general support for a revision of these designations, he would be only too glad to discuss the matter with the producers.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 4TH.

Eye strain among Civil Service Clerks.

Mr. WILLIAM BROWN asked the Postmaster-General whether, in view of the extraordinary amount of sick leave for eyestrain granted to clerical officers in the ledger sections of the Savings Bank Department during 1929 and 1930, he intended to instal individual lighting in addition to flood lighting in the above sections.—Mr. H. B. LEES-SMITH replied: No, Sir. The improvements in the lighting at the Savings Bank Department, to which I referred in my reply on Dec. 15th, have now been completed. The introduction of individual lighting would result in conditions more conducive to eyestrain than the present system of general lighting, and would be a retrograde step.

Health of the Navy.

Mr. HORE-BELISHA asked the First Lord of the Admiralty if he could give any reasons for the increase in the incidence of disease in the Royal Navy, as revealed in reports on the health of the Navy for 1929.—Mr. G. H. HALL replied: The increases in the incidence of disease in the Royal Navy during 1929 were due principally to augmented figures for influenza and diseases of the respiratory system. The vast majority of these cases were of a mild nature. The slight increases shown in 1929 afforded no grounds for anxiety as to the state of health existing in His Majesty's Navy.

THURSDAY, FEB. 5TH.

Pensioners and Seven Years' Limit.

Mr. D. G. SOMERVILLE asked the Minister of Pensions the number of applications in respect of cases outside the seven years' limit which had been investigated by his Department in each of the last three years; the number of such cases in which favourable awards had been made; and the aggregate annual payment which these awards entailed.—Mr. ROBERTS replied: I have no record of the aggregate number of the applications of this nature which were dealt with by the Ministry during the years in question, but the number of cases in which the application was recognised by the Ministry either by way of treatment or pecuniary compensation was in 1928, 318; in 1929, 497; and in 1930, 991. The present annual cost of the awards made is estimated at approximately £70,000. No record is available of the cost of treatment and treatment allowances in the cases in which treatment has been provided.

Poor-law Children's Homes.

Mr. LOVAT-FRASER asked the Minister of Health if he was aware that children over 3 years of age were living in the Lancaster Institution and the Hornby Institution, under the control of the Lancaster Public Assistance Committee, contrary to the regulations of the Ministry; and if he would have them removed.—Miss SUSAN LAWRENCE replied: My right hon. friend understands that there are no children over 3 years of age living in the ordinary wards of the institution at Lancaster. There are 51 children in the Park Side Children's Home which is adjacent to, but distinct from, the institution, with a separate entrance. The Hornby Institution has, for some time, with my right hon. friend's concurrence, been mainly used to accommodate mentally defective and backward children. The use of this institution will no doubt be further considered as part of the general problem of classification in the county.

Mr. LOVAT-FRASER asked the Minister of Health if he was aware that the children's home at Rochford, under the Southend Public Assistance Committee, was overcrowded; and if he would secure improvement in this respect.—Miss SUSAN LAWRENCE replied: Yes, Sir. My right hon. friend brought this matter to the notice of the Council in June last, and understands that they are considering the provision of increased accommodation. My right hon. friend is keeping in touch with the Council on the matter.

Ophthalmic Benefit.

Mr. WOMERSLEY asked the Minister of Health if he was aware that, as a result of the operation of Section 25, Paragraph (5) (*b*), of the National Health Insurance (Additional Benefits) Regulations, 1930 (Provisional Regulations, dated June 18th, 1930), a large number of unqualified suppliers of optical glasses were now giving ophthalmic treatment and supplying glasses; and what action he proposed to take.—Miss SUSAN LAWRENCE replied: The provision of the Regulations to which the hon. M refers is designed to conform to the principle of fre of practitioner which was laid down by the N Insurance Act, 1928. My right hon. friend has no that it has resulted in unsuitable treatment or appli being provided to insured persons; and in his view sufficient safeguard is furnished by the authority given to society, if it has good reason for doing so in a particular case, to withhold consent to a member obtaining gla from an optician who is not a member of an organisation recognised by the society.

Hospitals and Supply of Drugs to Panel Patients.

Mr. FREEMAN asked the Minister of Health how many, if any, hospitals had been registered under the National Health Insurance Act for the supply of medicine, drugs, and appliances to panel patients; and whether he proposed to take any action in this matter.—Miss SUSAN LAWRENCE replied: So far as my right hon. friend is aware, no hosp is included in any list of persons supplying drugs, medicines and appliances under the National Health Insurance Act. The second part of the question does not, therefore, arise.

Co-operative Benefits on Insurance Prescriptions.

Sir KINGSLEY WOOD asked the Minister of Health whether he had taken any action with reference to the representations of the Co-operative Congress and other co-operative societies and bodies against the regulations which prohibited the payment of co-operative dividends on national health insurance prescriptions.—Miss SUSAN LAWRENCE replied: My right hon. friend has decided to revoke Clause 4 (4) of the terms of service of insurance chemists, which covers this matter, and has informed the representative bodies concerned accordingly.

Sir KINGSLEY WOOD asked when this change would made.

Miss LAWRENCE: Very shortly.

Sewage Water in Kensington.

Mr. WEST asked the Minister of Health whether steps were being taken to prevent the flooding of houses with sewage water in Kensington.—Miss SUSAN LAWRENCE replied: My right hon. friend understands that the London County Council have taken and are taking extensive measures to improve their storm relief sewerage system so as to prevent as far as practicable the flooding of premises in Kensington.

Surveys of Local Health Services.

Lieut.-Colonel FREMANTLE asked the Minister of Health when the surveys of the health services of local authorities by the officers of his department would be sufficiently advanced for him to say in how many areas no propaganda on venereal disease was being undertaken.—Miss SUSAN LAWRENCE replied: It is anticipated that the initial surveys of the health services of the county and county borough councils will be completed in about two years' time.

Lieut.-Colonel FREMANTLE: Does that mean that no action can possibly be taken until two years' time?

Miss LAWRENCE: I would not go so far as that.

London Cleansing.

Lieut.-Colonel FREMANTLE asked the Minister of Health if he had received the report of the Metropolitan Boroughs Standing Joint Committee on the recommendations of the departmental committee on London cleansing; and what action he proposed to take with a view to centralisation in the disposal of house, trade, and street refuse in London.—Miss SUSAN LAWRENCE replied: My right hon. friend has now received a report from the Standing Joint Committee which indicates than 11 metropolitan sanitary authorities were in favour of centralisation and 18 against it. The question is receiving my right hon. friend's further consideration, but it is not practicable to contemplate introducing legislation this session.

Amendment of the Children's Act, 1908.

Viscountess ASTOR asked the Home Secretary whether he could give any indication when the Bill amending the Children's Act, 1908, would be introduced.—Mr. CLYNES replied: I should be glad if I could find it possible later in the session to introduce this Bill, but at present I am afraid I cannot make any more definite statement.

FRIDAY, FEB. 6TH.

Invaliding from the Navy.

Mr. HORE-BELISHA asked the First Lord of the Admiralty the number of ratings invalided from the Royal Navy during the year 1930; the number whose invaliding lity was considered to be attributable to the Service; number of ratings invalided during the same period ering from consumption; the number of cases accepted being attributable to the Service; and the number to om disability pensions were granted.—Mr. Ammon rliamentary Secretary to the Admiralty) replied: The ticulars are as follows: Ratings invalided during 1930, 0; disability accepted as attributable to the Service, ; ratings invalided during 1930 for consumption (pulnary tuberculosis), 196; number (included in the above re of 196) whose disability was accepted as attributable the Service, 143; invalided for pulmonary tuberculosis granted disability pensions, 143.

MONDAY, FEB. 9TH.

Telephone Concessions to Doctors.

ir William Brass asked the Postmaster-General whether rder to popularise the telephone service in rural areas would consider reducing the business rate paid by ners, doctors, and nurses to that of the residential rate; l what the cost of this concession would be.—Mr. Lees-th replied: I regret that in the application of telephone s I cannot discriminate between farmers, doctors, ses, and subscribers engaged in other businesses or fessions. In the absence of detailed information as to number of subscribers in the classes mentioned, I cannot e what would be the cost of such a concession; but it ld be large and increasing.

Children in Droitwich Institution.

Ir. Lovat-Fraser asked the Minister of Health how ny children over the age of three were living in the itution at Droitwich.—Miss Susan Lawrence replied: re are no healthy children over three in the Droitwich titution. My right hon. friend is informed that there two in the sick wards who are there for medical reasons.

Medical Diary

SOCIETIES.

YAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Feb. 17th.—5.30 p.m., General Meeting of Fellows. 8 for 8.30 p.m., Pathology.

Wednesday.—8.30 p.m., Reception. Fellows and their Friends will be received in the Library by the President and Mrs. Watts Eden. At 9.15 p.m., Dr. H. Letheby Tidy will give an address entitled Poisoners of Ancient Times.

Thursday.—5 p.m., Dermatology and Comparative Medicine. (Cases at 4 p.m.) Special discussion on Scabies and Ringworm as Transmissible Between Animals and Man. Openers: Dr. Arthur Whitfield and Dr. W. J. O'Donovan (Dermatology). Mr. J. W. H. Holmes, Mr. G. H. Livesey, and Mr. A. W. Noel Pilliers (Comparative Medicine). Other speakers will take part. Cases will not be discussed.

Friday.—5 p.m., Balneology and Climatology. Discussion on Research on Physiological Effects of Baths. 8 p.m., Obstetrics and Gynæcology. Specimen: Sir Ewen Maclean: Very Large Vesical Calculus. Cases: Lady Barrett: 1. Chorion Epithelioma. 2. Carcinoma of the Fallopian Tube. Paper: Dr. A. A. Osman and Dr. Harold G. Close: Observations on the Plasma Bicarbonate, and the Value of Alkalis in the Treatment of Some of the Renal Complications of Pregnancy. 8.30 p.m., Electro-Therapeutics. Discussion on the future policy of the Section, with a view to making such recommendations as may be considered necessary by the Members present.

EDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

Monday, Feb. 16th.—9 p.m., Dr. J. W. McNee: The Spleen: Its Structure, Functions, and Diseases. (First Lettsomian Lecture.)

OYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

Thursday, Feb. 19th.—7.45 p.m., Demonstration. 8.15 p.m., Dr. H. C. de Souza-Araujo, of the Instituto Oswaldo Cruz, Rio de Janeiro, Brazil: Experimental Leprosy and the Treatment of Leprosy.

OCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, W.C.

Friday, Feb. 20th.—5 p.m., Dr. J. A. Charles and Dr. S. H. Warren: Bacillus Dysentery in Great Britain.

RITISH INSTITUTE OF RADIOLOGY, 32, Welbeck street, W.

Thursday, Feb. 19th.—8.30 p.m., Mr. C. E. S. Phillips: Preparation of Radium Salts for Therapeutic Use. Prof. E. N. da C. Andrade: Model to Illustrate Passage of an Alpha Particle in the Neighbourhood of an Atomic Nucleus. Dr. W. Roy Ward: Some Aspects of Radium Therapy. Dr. Arthur Burrows: Organisation of the Radium and X Ray Cancer Service in Australia.

Friday.—11 a.m., Visit to Radiological Dept. of King's College Hospital. 5 p.m., Dr. H. Cohen and Dr. P. H. Whitaker: Cinematograph of Ventriculography. Dr. R. E. Roberts: Lymphosarcoma Involving the Stomach. Carcinoma of Lung. Dr. J. H. Mather: Idiopathic Myositis Ossificans. Dr. Graham Hodgson: Sinus Investigation. Dr. Thurstan Holland: Radiograms.

ROYAL INSTITUTION, 21, Albemarle-street, W.

Thursday, Feb. 19th.—5.15 p.m., Prof. J. B. S. Haldane: Respiration.

Friday.—9 p.m., Prof. J. B. S. Haldane: Prehistory and Genetics.

CHELSEA CLINICAL SOCIETY.

Tuesday, Feb. 17th.—8.30 p.m. (at Hotel Rembrandt, Thurlow-place, S.W.). Discussion on the Treatment of Glandular Deficiencies. Opener: Dr. W. Langdon Brown. (Preceded by Dinner at 7.30 p.m.)

ROYAL MICROSCOPICAL SOCIETY.

Wednesday, Feb. 18th.—5 to 5.30 p.m. (at Hastings Hall, B.M.A. House, Tavistock-square, W.C.), Prof. Robert Chambers (New York): The Nature of the Living Cell (with Demonstration).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Feb. 16th, to Saturday, Feb. 21st.—Medical Society of London, 11, Chandos-street, Cavendish-square. Mon., 4 p.m., free lecture by Dame Louise McIlroy on Early Diagnosis of Uterine Cancer with Lantern Demonstration.—Chelsea Hospital for Women, Arthur-street, S.W. Free demonstration of Gynæcological Operations by Mr. F. Cook on Mon., 2 p.m.—St. John's Hospital, Leicester-square, W.C. Free dermatological demonstration by Dr. A. C. Roxburgh on Fri., 2 p.m.—Royal Waterloo Hospital, Waterloo-road, S.E. Fri., 4.30 p.m., Special lecture on Routine Measures after Abdominal Operations. By Mr. Rodney Maingot.—Queen's Hospital for Children, Bethnal-green, E. Special Course in Diseases of Children. All day.—Hospital for Tropical Diseases, 25, Gordon-street, W.C. Special post-graduate course in Tropical Medicine. All day.—Further particulars from the Fellowship of Medicine.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-Road, W.C.

Friday, Feb. 20th.—4 p.m., Mr. Lowndes Yates: Curable and Incurable Deafness.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

Tuesday, Feb. 17th.—3.15 p.m., Dr. E. G. B. Calvert: Arthritis (with cases).

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

Wednesday, Feb. 18th.—4 p.m. (at the Battersea Mortuary). Dr. R. M. Bronte: The Making of a Post-mortem Examination.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

Thursday, Feb. 19th.—5 p.m., Dr. H. C. Lucey: Clinical Pathology of Pregnancy.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

Friday, Feb. 20th.—5 p.m. (at 11, Chandos-street, Cavendish-square, W.), Dr. W. J. O'Donovan: Impetigo in Day and Public Schools.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

Thursday, Feb. 19th.—9 p.m., Mr. J. B. Hunter: Surgery of the Lung.

UNIVERSITY COLLEGE MEDICAL SCHOOL, University-street, W.C.

Tuesday, Feb. 17th.—5.15 p.m., Dr. Janet Vaughan: Pathology and Treatment of Pernicious Anæmia.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Agar-street, W.C.

Sunday, Feb. 15th.—10.30 a.m., Mr. W. H. Mullen: Causes of Falling Sight in Old Age. 11.45 a.m., Mr. L. G. Brown: Questions and Answers in Relation to Diseases of the Ear.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

Wednesday, Feb. 18th.—4 p.m., Dr. Thomas Marlin: Bone Setting.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Public Health Division), Keppel-street, Gower-street, W.C.

Monday, Feb. 16th.—5 p.m., Col. L. W. Harrison: Venereal Disease Schemes.

Wednesday.—5 p.m., Col. Harrison: Treatment Centres.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Monday, Feb. 16th.—2.30 to 5 p.m.: Medical Surgical, and Gynæcological Clinics. Operations.

Tuesday.—2.30 to 5 p.m.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

Wednesday.—2.30 to 5 p.m.: Medical, Skin, and Eye Clinics. Operations.

Thursday.—11.30 a.m.: Dental Clinics. 2.30 to 5 p.m.: Medical, Surgical, Throat and Ear Clinics. Operations.

Friday.—10.30 a.m.: Ear, Nose, and Throat Clinics. 2.30 to 5 p.m.: Medical, Surgical, and Children's Diseases Clinics. Operations.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

Tuesday, Feb. 17th.—5 p.m., Dr. J. E. M. Wigley: Lupus Erythematosus.

Thursday.—5 p.m., Dr. I. Muende: Pathology Demonstration.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Feb. 16th.—12 noon, Dr. Greenfield: Pathology of Demyelinating Diseases. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Cerebral Anæmia and Hyperæmia.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Purdon Martin: Meningeal Hæmorrhage.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Mr. Just: Demonstration of Methods of Testing the Eighth Nerve.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M. Dr. Collier: Neurosyphilis.

ST. MARY'S HOSPITALS, Manchester.

FRIDAY, Feb. 20th.—4.15 P.M. (at the Whitworth-street West Branch), Dr. Lapage: Bronchitis, Pneumonia, and Asthma in Infancy and Childhood.

Appointments

GERRARD, E. A., M.B. Manch., M.R.C.S., has been appointed Assistant Surgical Officer to Gynæcological Dept., Manchester Royal Infirmary.

STRANGE, E. H., Certifying Surgeon under the Factory and Workshop Acts for Hackney.

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Hon. Asst. Medical Electrician and Radiologist.

Barry, U.D.C. Surgical Hospital.—H.S. £200.

Bedford County Hospital.—Asst. H.S. At rate of £130.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—Asst. Surg.

Birmingham General Hospital.—H.P. £70.

Birmingham and Midland Eye Hospital.—Res. Surg. O. £110.

Bradford, Municipal General Hospital, St. Lukes.—H.P.'s and H.S.'s. Each at rate of £200.

Bristol Royal Infirmary.—Radium Officer. £600.

Cardiff Royal Infirmary.—Ophth. H.S. Also Surg. H.S. At rate of £75 and £50 respectively.

Carlisle, Cumberland Infirmary.—Second H.S. Also H.S. to Spec. Depts. Each at rate of £155.

Carlisle, Cumberland and Westmorland Mental Hospital, Garlands.—Jun. Asst. M.O. £350.

Chester Royal Infirmary.—H.S. to Ear, Nose, and Throat Dept. £150.

Chester, Wrenbury Hall Tuberculosis Training Colony.—Res. H.P. £250.

City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.

Coventry and Warwickshire Hospital.—Res. H.P. £160.

Derby County.—Deputy County M.O.H. £840.

Dundee, City of.—Asst. M.O.H. £600.

Durham County Council.—Asst. School M.O. £500.

Edinburgh Mental Health Services.—M.O. £1000–£1250.

Evelina Hospital for Children, Southwark, S.E.—Hon. Dental Surgeon.

Exeter, Princess Elizabeth Orthopædic Hospital.—Orthopædic Surgeon. £600.

Glasgow Eye Infirmary.—Res. Asst. H.S. £150.

Gloucestershire Royal Infirmary and Eye Institution.—2nd H.S. At rate of £120.

Golden-square, Throat, Nose, and Ear Hospital, W.—Hon. Asst. Surg.

Gravesend and North Kent Hospital.—Jun. H.S. At rate of £100.

Great Yarmouth General Hospital.—Jun. H.S. £140.

Hertford, Borough of.—M.O.H. £800.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £300.

Hull Royal Infirmary.—H.P. for Sutton Branch. At rate of £160.

Ipswich, East Suffolk and Ipswich Hospital.—Two H.S.'s. Each £120.

Lambeth Metropolitan Borough.—Two Con. Obstetricians. 4 gns. a case.

Leeds University, Department of Pathology and Research.—Lecturer in Pathology. £500.

Leicester, City Mental Hospital, Humberstone.—Second Asst. Res. M.O. £450.

Liverpool, David Lewis Northern Hospital.—H.S. two H.P.'s. Each at rate of £100.

Liverpool Eye and Ear Infirmary, Myrtle-street.—Ophth. H.S. £100.

London Homœopathic Hospital, Great Ormond-street and Queen-square, Bloomsbury, W.C.—Asst. Phys. for Diseases of Children.

Maidstone, Kent County Hospital.—Asst. M.O. £509.

Manchester, Ancoats Hospital.—Res. M.O. At rate of £150.

Margate and District General Hospital.—Res. M.O. £125.

Metropolitan Hospital, Kingsland-road, E.—Physician.

Miller General Hospital, Greenwich-road, S.E.—Res. Surg. O. and Reg. £250.

Newark General Hospital.—Res. H.S. £175.

Newcastle General Hospital, Newcastle-upon-Tyne.—H.P. At rate of £100.

Newcastle-on-Tyne, Royal Victoria Infirmary.—Sen. M.O. and Two Jun. M.O.'s. At rate of £200 and £100 respectively.

North Kensington Women's Welfare Centre, Telford-road, W.—M.O. 1½ gns.

Nottingham Hospital for Women.—H.S. At rate of £15

Oldham, Boundary Park Municipal Hospital.—Res. Asst. M.O. At rate of £200.

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each of £175.

Plymouth, South Devon and East Cornwall Hospital.—Anæsthetist and H.S. to Spec. Depts. At rate of

Poplar Metropolitan Borough of.—Asst. M.O.H., Tuber Section. £600.

Portsmouth, Royal Hospital.—Third H.S. At rate of £1

Prince of Wales's General Hospital, N.—Hon. Surg. Reg.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Dist. Res. M.O. and Asst. Res. M.O. Each at rate of

Queen's Hospital for Children, Hackney-road, E.—Cas. O. rate of £100. Second Surg. to Ear, Nose, and Throat Also Clin. Asst. 5s. per attendance.

Royal College of Surgeons of England.—Examiner.

Royal Waterloo Hospital for Children and Women, Waterloo S.E.—Asst. Dental Surgeon. 25 gns.

St. Bartholomew's Hospital, E.C.—Dental H.S. £80.

St. Thomas's Hospital.—Res. Asst. Phy. and Res. Asst. Also Chief Asst. to Throat Dept.

Salisbury, General Infirmary.—Two H.S.'s and H.P. Each

Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Anæsthetist. £80–£100.

Shoreditch Metropolitan Borough, E.C.—Public Vaccinator.

Southampton Children's Hospital and Dispensary for Wom Res. M.O. At rate of £100.

South Shields, Ingham Infirmary.—H.S. £150.

Southampton, Royal South Hants and Southampton Hosp Cas. O. At rate of £180.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. £1

Sutton, Surrey, Sutton and Cheam Hospital.—Hon. Radiol

Swanley, Kent, Hospital Convalescent Home.—Res. M.O. rate of £200.

Swansea General and Eye Hospital.—Cas. O. £200.

Tilbury Hospital, Essex.—H.S. At rate of £150.

University College Hospital, W.C.—Hon. Surgeon. Ear, N and Throat Department.

Wakefield, West Riding Mental Hospital.—Jun. Asst. M.O.

Weston-Super-Mare General Hospital.—Res. H.S. At rate £150.

Weymouth and District Hospital.—H.S. £180.

Wolverhampton, Royal Hospital.—H.S. for Ear, Throat and N Dept. At rate of £100.

Wrexham and East Denbighshire War Memorial Hospi Hon. Asst. Phys. and Surg.

The Chief Inspector of Factories announces a vacant appoint for a Certifying Factory Surgeon at Northleach (Glos.).

Births, Marriages, and Deaths

BIRTHS.

BROOKE.—On Feb. 2nd, the wife of Ralph Brooke, M F.R.C.S., of Warren Lodge, Western-place, Worthing, son.

HARRIS.—On Feb. 5th, at Springfield Hospital, Wands Common, the wife of Noel G. Harris, M.B., B.S., daughter.

PORTER.—On Feb. 3rd, at Kidderminster, the wife of Petvin Porter, of a son.

SLOANE.—On Feb. 4th, at Southsea, the wife of Surgeon J. M. Sloane, R.N., of a daughter.

MARRIAGES.

HAINES—MACPHAIL.—On Feb. 5th, at All Saints' Pa Church, West Bromwich, Major George H. Haines, R.A.M.C., to Laura Ailsa, daughter of the late D MacPhail and Mrs. Laura MacPhail, Dagger-lane, W Bromwich.

MACKENZIE—AINSWORTH.—On Jan. 26th at the Chapel of Savoy, Major E. F. W. Mackenzie, O.B.E., M.C., R.A.M to Violet May, elder daughter of Colonel and Mrs. E Ainsworth, of Monteagle House, Twickenham Middlesex.

DEATHS.

BERRILL.—On Feb. 2nd, at Park Hall, Great Bardfield, Bra tree, Essex, suddenly, Alfred Berrill, M.R.C.S., L.C.P. Lond., late of Woodford, in his 67th year.

BIRKETT.—On Feb. 5th, George Edmondson Birkett, M B.A. Camb., M.R.C.S., Honorary Radiologist, Manche and District Radium Institute, aged 37.

FOULERTON.—On Feb. 2nd, at his residence, Morpeth-terr S.W.1, Alexander Grant Russell Foulerton, O.B F.R.C.S., L.R.C.P., D.P.H., aged 67 years.

RIDPATH.—On Feb. 8th, at Thornhill-crescent, Sunderla David Ridpath, M.D., in his 87th year.

ROBERTSON.—On Jan. 31st, at Chester-crescent, Lee-on-Sol Hampshire, James Sprent Robertson, M.D., aged 74.

THOMAS.—On Jan. 30th, at his residence, Bron-y Newport, Mon., Sir (Abraham) Garrod Thomas, M.D., D LL.D. aged 77.

VERNON.—On Feb. 1st, at "Drayton," Queen's Park Bournemouth, Lieut-Colonel Arthur Heygate V T.D., J.P., F.R.C.S. late R.A.M.C. (T.), aged 66.

N.B.—A fee of 7s. 6d. is charged for the insertion of Not Births, Marriages and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

FEMININE PSYCHOLOGY.

AN attempt has been made by certain American men doctors, teachers, and social workers to shed ht on the dark places of the psychology of their n sex by means of an exhaustive inquiry.[1] A estionaire was issued to 10,000 married women ected at random from the membership lists of men's clubs and kindred organisations, and to ,000 college graduates of more than five years' nding. Some 1000 married women and 1200 of unmarried replied. In view of possible criticism is only fair to state that Dr. Davis, who conducted inquiry, took elaborate precautions to ensure that r informants were a fair sample of educated woman-od, but there was possibly a preponderance of ose who had lived in communities of their own sex, d this may have had some effect on the replies. w far complete objective reliability of statement sex matters can ever be obtained, even in an onymous questionaire, is another matter.

The subjects investigated included the use of ntraceptives, the practice of abortion, factors termining the happiness of married life, auto-otic and homosexual tendencies, the periodicity of x desire in the married and unmarried, and the value sex education. The analysis is handled with great atistical skill, but is over elaborated; a simpler esentation of the conclusions would have been elcome. A few of the inquiries led to results that ay have been unexpected. For example, of 1000 arried women, 730 stated that they had used ntraceptives; the average number of children nong those 730 appears to have been greater than the erage among 270 who did not use contraceptives. he effects of birth control on health, fertility, and arital happiness would be very difficult to elucidate om these figures, and indeed they indicate how mplex are the factors which must be taken into count when conclusions are drawn on the effect contraceptives in any community. Of the 1000 omen, 93 had had artificial abortion performed ome many times), and in all but a few for reasons her than health; in the larger proportion of ese cases contraceptives had been tried and failed. nong the unmarried women no less than 64·8 per nt. admitted to masturbation at some time or her of their lives. It is surprising to learn that though about 60 per cent. of women who masturbate art the practice before 16, only 14 per cent. contract e habit in college, as compared with over 20 per nt. who deliberately begin between the ages of 2 and 40, usually as a relief for sex feeling if marriage id not take place. The statements of the women ow that while the evils of the practice have been eatly exaggerated, about half of those admitting the practice had already dropped it. The section n homosexual practices will be challenged in many uarters. Dr. Davis had already been led by her xperiences among both normal and delinquent omen in communities to expect a high percentage, nd she finds that 50·4 of her informants admit to intense emotional relations" with other women. n 203 out of 1200 replies the writers deny that they ere conscious at the time that the emotion was exual in character, but 78 recognised it as such later, nd in another 234 it was accompanied by overt acts f an unmistakable significance. It is this latter roup which will appear so unexpectedly large, even o the psychiatrist disillusioned by the study of the bnormal. The author hints that the replies show hat certain kinds of college life tend to fix the ague and fleeting homosexual impulses so common in childhood and adolescence, and her figures are unduly weighted by the fact that her information was drawn from graduates. Both extra-marital relations with men and masturbation are more common among the homosexuals; the true fixed invert is rare. The whole trend of this evidence goes to support the Freudian theory of homosexuality as the persistence of a phase of infantile sexuality. It is again contrary to the usual experience to find 570 out of 808 unmarried women claiming to recognise some periodicity of sex desire; 272 experienced a regular periodicity, and in 110 out of the 808 it has been possible to chart the actual day with reference to the menstrual period. The most frequent point in the cycle for desire to be noted is the week preceding menstruation, but a considerable number place it a few days after. In a group of 200 women, married and unmarried, "the time of highest frequency of desire coincides with the least likelihood of conception," p. 220. The physiological basis for such a curious phenomenon is important to determine, but the whole study obviously needs confirmation.

Dr. Davis is to be congratulated on a gallant effort to obtain facts essential for the proper understanding of the mind in health or disease, but extraordinarily hard to collect. She has made a real contribution in an important field.

TULARÆMIA IN NORWAY.

Two papers in *Norsk Magazin for Laegevidenskaben* for January illustrate the old experience that as soon as a hitherto unknown disease is accurately described and defined, many cases of it are promptly diagnosed. Tularæmia is a case in point. It was only last year that Dr. T. Thjötta first reported three cases in Norway. A little later in the same year this number had risen to 11. In the paper he has now published he says that about 50 cases have been described and the figure is increasing steadily. The disease is, indeed, already familiar to so many doctors in Norway that they recognise it easily from the clinical picture, provided the patient gives a history of having handled a hare. Some 25 human cases of the ulcero-glandular type of tularæmia have been observed on fox-farms where the foxes had been fed on hares. One of the most interesting cases reported was that of a man who found a dead hare on the ground, handled it, and then threw it away. This brief contact was sufficient to give him the disease. Another man contracted it the day after he had carried a skinned hare, packed in thin paper, for only about 200 metres. The first case suggests that infected insects from the dead animal had conveyed the disease to the man in question, and it would seem that the second patient was infected through the unbroken skin by blood-stained fluid which had soaked through the paper wrapper. Dr. Thjötta does not incriminate hares only, and he records cases in which infection through hares could be eliminated, and lemmings or field mice were definitely suspect. One patient was infected by the bite of a cat in a district where dead field mice were numerous, and Dr. Thjötta suggests that the cat was merely a link between an infected field mouse and the patient. He attaches special importance to the periodic migrations of lemmings from their mountain fastnesses down to the valleys and fjords, and he refers to the old observation that such lemming years are followed by years of a high mortality-rate among hares. In the other paper in the same number of *Norsk Magazin*, Dr. H. A. Salvesen, after recording four cases, concludes that shooting hares in Norway is a dangerous sport. Not only "the man who shoots the hares," but all who have to handle it, from the game-dealer to the cook, are liable to contract a disease which, even though it is not likely to prove fatal, is serious enough on account of the many weeks of invalidism it inflicts. The relation of tularæmia to hares is already known to many outside the medical profession in Norway, and rubber gloves are being used in the handling of them, but Dr Salvesen believes that it may be necessary to forbid their sale as far as certain specially infected districts are concerned. Meanwhile Dr. Thjötta and his associates are collecting material from all over the country in order to study the epidemiology of this disease. Such a study may incidentally throw some light on periodic declines in the rodent population in certain areas.

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[1] Factors in the Sex Life of Twenty-two Hundred Women. By Katherine Bement Davis, Ph.D. Publication of the Bureau of Social Hygiene. London and New York: Harper and Brothers, Ltd. 1930. Pp. 430. 12*s*. 6*d*.

CHILD STUDY.

THE Child Study Society includes some varied information in the eighth volume of its Journal of Proceedings. The Howard plan and its evolution is the subject of an address to the society by Mrs. O'Brien Harris. Her description of the school at Laura-place, Clapton, with its grouping, in the manner of a university, into various faculties which the pupils attend upon their own responsibility, indicates that latitude may have better results in education than a rigid curriculum. In a lecture on some of the old children's books, Florence V. Barry mentions the publications of John Newbery in the eighteenth century, at the Bible and Sun, St. Paul's Churchyard. In these little books, whose flowery covers were painted by children, a moral was present indeed, but not with the nauseating emphasis found in the books of the next century, and so artfully concealed in the jam as to be palatable. A discussion on nursery schools, opened by Miss Clara E. Grant and Dr. Norman Glaister, is reported in the journal, and the subjects of other lectures are the teaching of Shakespeare in schools, mass methods, co-education, the use of books in school and home, and sunlight in childhood, from which it can be seen that many aspects of child study are attacked with energy and interest. The society meets once a month on Thursday evenings at the Royal Sanitary Institute, 90, Buckingham Palace-road, London, S.W. 1. The hon. secretary, Mrs. I. M. Jarman, B.Sc., can be approached at this address.

LARGE HYDATID CYSTS.

IN our report of Dr. J. F. Brailsford's paper on hydatid disease, read to the British Institute of Radiology (see THE LANCET, Jan. 24th, p. 185), appears a statement that the livers of some of the infected cows seen on his daily visits to the Birmingham public abattoir weighed as much as 200 lb. instead of the normal 14 lb. A correspondent has written to suggest that 200 lb. is a misprint for 20 lb., but we learn from Dr. Brailsford himself that the reported figure is correct "One of the first cases of hydatid disease I saw in a cow 20 years ago," he writes, "had a huge liver which, even after rupture of many of the cysts in conveying the liver to the scales, weighed only just short of 200 lb. The cow was thought to be in calf, but as the calf did not appear and the abdomen continued to swell the animal was slaughtered and the huge hydatid liver was then discovered to be the cause of the swelling."

ACCIDENTS, CARE, AND CAUTION.

MUCH in this world is clearly inevitable, but sickness and deaths due to violence always seem sadly unnecessary. The cause is no faulty gene, elusive germ, or fading hormone; it is something obvious, avoidable. Hence the campaign for accident prevention, which aims at inculcating carefulness and safety-first methods by displaying the results of carelessness. An "accident prevention calendar," lately issued,[1] shows how difficult it is to do this altogether acceptably. The book is good; but in our opinion it lays too much stress on "do not" and too little on "do." Adults as well as children readily react in the negative, and many people resent information intended to make their flesh creep. The road of life may hardly be worth the venture if we must keep looking continuously to right and left.

The calendar states that at least 80 per cent. of accidents are due to no mechanical agency but to personal stupidity and carelessness. It omits to say, however, that in industry it is found that 75 per cent. of these accidents are caused by 25 per cent. of the people performing the particular [illegible] concerned. Members of this group seem to co[illegible] other kinds of sickness as well as accidents, and they are not highly competent at their work. In fact, this group is an unhealthy group, an [illegible] group, ill-suited to its surroundings, and attention concentrated on improving its adjustment would do far more to reduce accidents than efforts to scare the whole community into constant caution. The skilled artisan is heathily active; he has few accidents and he passes by the world's hazards, not unaware, but without a sideways tremor. Formerly such a man was said to possess sound horse-sense, but nowadays we might call it machine-sense. Let us cultivate such a sense and by all means not be foolhardy; but actions are guided better by a healthy than a frightened mind.

NOTES ON RHEUMATIC INFECTION.

FROM Messrs. Burroughs Wellcome and Co. we have received two little publications having lists of certain of their tabloid preparations which are of tried use in the many conditions implied by the titles. The notes on rheumatic infection in particular are prefaced by a précis of accepted knowledge in regard to acute rheumatic infection in which the problem of cause is very well set out. Beginning with Poynton and Payne's researches, which date from 1900, the claims for the diplococcal streptococcus to be the causal organism of infection are discussed and the support which other bacteriologists have been able to give to the original views is recorded. The way to account for the anomalous findings which have characterised the research in different hands is to hold that acute rheumatism is a hypersensitive state brought about by the liberation of allergising substances from streptococcal foci wherever these may be. The foci are held to arise where allergising substances are produced and liberated to sensitise various groups and cells of the body. The theory no doubt accounts for many of the physical signs which make up what is alluded to in the notes as the acute rheumatic syndrome.

BIRCON CONTRACEPTIVE TABLETS.

WE have received from the Bircon Laboratories, Elarco House, 183, Aldersgate-street, London, E.C., samples of anticonceptive tablets which have been distributed to the medical profession through pharmacists for the last 12 years. The tablets are said to contain chinosol and zinc sulphocarbolate, with a sodium bicarbonate base and other suitable antiseptics and deodorants. When moistened they generate a foam which coats the external os uteri and penetrates the recesses of the vaginal passage, killing, it is stated, the spermatozoa within five seconds. A comparative test, using guinea-pig sperms, has shown Bircon to be more effective than some other chemical contraceptives on the market. Bircon is claimed to be harmless to the mucous membrane, even when used regularly, and it is stated that there is no need for syringing immediately after use.

BERBERINE SULPHATE IN ORIENTAL SORE.

Captain P. V. Karamchandani, I.M.S. retd., has drawn our attention to an ambiguous sentence in his note on this subject (THE LANCET, 1930, i., 78). The text was slightly amended before publication and it was not made clear that Captain Karamchandani had himself introduced the method of treatment he described. His original contribution, entitled An Analysis of 337 Cases of Oriental Sore Treated by Various Methods, appeared in the *Indian Medical Gazette* (1927, lxii., 560).

HULL'S MUNICIPAL HOSPITAL.—A scheme for a new municipal general hospital estimated to cost £285,000 has been approved. It is proposed to build the new hospital on the site of Hull workhouse on Anlaby-road, and to remove the destitute poor to Sculcoates workhouse on Beverley-road.

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[1] Accident Prevention Calendar, 1931. Accident Prevention and Welfare Publications, Ltd., 321, High Holborn, London, W.C.

ADDRESSES AND ORIGINAL ARTICLES

THE USE OF BCG IN THE VACCINATION OF CALVES AGAINST TUBERCULOSIS.

AN INTERIM REPORT.

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In 1920 Calmette and Guérin[1] reported a new method of immunising cattle against tuberculosis. The vaccine used was derived from a bovine strain of the tubercle bacillus which had been cultivated for many years on potato soaked in 5 per cent. glycerin ox bile. Originally of full virulence the strain, under the constant influence of the bile, underwent a progressive debasement of its virulence so that after 230 subcultures on this medium—the subcultures were made every 20–25 days—the organism had become entirely harmless, a quality which, according to Calmette, it has retained ever since. He regards it as an artificially attenuated strain with fixed characteristics.

Unlike other vaccines which are made with human, bovine, or avian strains of varying degrees of attenuation, and which are still capable of provoking the formation of tubercles and of spreading tuberculous infection, B C G,* it is claimed, is attenuated to such a degree that not only is it incapable of producing progressive tubercles but also of regaining its original virulence. The further claim is made for B C G that, although the strain is entirely deprived of its original virulence, it has the power, when introduced into the bodies of young animals, to produce a firm resistance against a subsequent infection with virulent strains of the tubercle bacillus.

Calmette[2] holds the view that this immunity is dependent upon the persistence of B C G in the lymphatic system. The process is, therefore, one of "premunition" and the duration of the immunity is inseparable from the presence of the living vaccinating organisms in the tissues; this immunity is lost when the vaccinating bacilli are eliminated from the body by the natural channels or are destroyed through digestion by the body cells. This disappearance of B C G, according to Calmette, is effected in the bovine animal during the second year after vaccination and in laboratory animals after six months or less.

In their original publication[1] Calmette and Guérin recommended the vaccination of calves by the intravenous route, but they subsequently replaced this by the subcutaneous method.[3] They claim that if their instructions are carried out "in a herd infected with tuberculosis, without changing the routine of the farm and without modifying the methods currently used for raising the calves, it is possible by the vaccination of the calves during the first 15 days of their lives and by revaccinating them each year, to free the establishment from tuberculosis in five years." In their more recent publications[3] they have introduced the further modification that the calves should be vaccinated as soon after birth as possible and at the latest by the fifteenth day. For one month following vaccination they must be rigorously isolated from any chance of natural infection. They point out that, in an infected establishment, vaccination alone is insufficient; it must be reinforced by suitable hygienic measures—namely, effective isolation of the calves immediately after birth and their nourishment with milk which contains no living tubercle bacilli.

Naturally the claims put forward by Calmette and Guérin have evoked a widespread interest in B C G, and numerous workers have undertaken investigations with a view to their proof or disproof. A review of the mass of literature which is now available indicates that the general consensus of opinion in Europe tends to support Calmette and Guérin, whereas in America several workers have not only failed to substantiate their conclusions, but have made definite pronouncements against their methods. The majority of the experiments have centred around the two points which are of especial importance—namely, the innocuousness of the vaccine and its efficacy as an immunising agent.

INNOCUOUSNESS OF THE VACCINE.

It was not maintained, even by the originators of B C G, that the organism is incapable of producing lesions in the animal body, but it is claimed that such lesions are entirely benign and incapable of developing into active centres of tuberculosis. Calmette[4 5] states that when B C G is inoculated into laboratory animals in very small doses no definite changes can be detected, but that larger doses (5 mg. or more) may produce visible lesions of a strictly benign character. It has been further shown that B C G can be recovered from these lesions but is still incapable of setting up a progressive tuberculous infection on reinoculation into fresh animals.

The Ukrainian Commission (Tzechnovitzer)[6 7] tested the innocuousness of B C G in laboratory animals by different routes and in varying doses. 145 guinea-pigs were inoculated with from 5 to 300 mg.; 50 were killed and subjected to careful post-mortem examinations. In all these animals there were signs of a local adenitis and of giant-cell formation, but never any definite tubercle formation. In the rabbit, the evidence from post-mortem examinations of 63 animals inoculated with varying doses also demonstrated the harmlessness of the organism. Similar experiences have been reported by other workers (Kraus, Gerlach, Kolle, Griffith, Cummins, Jensen, Rankin, Park, Ascoli, King, &c.).

Watson,[8] on the other hand, obtained results which appeared to indicate that B C G could produce progressive tuberculosis in guinea-pigs. Petroff, Branch, and Steenken[9] claim that by passage through the testicle they were able to dissociate B C G into two types; the one strain provoked in the guinea-pig lesions of the type usually associated with B C G without generalisation, whilst the other caused death from generalised tuberculosis. Up to the present all attempts to confirm these observations have failed.

The results of the majority of workers show that B C G is incapable of producing tuberculosis in bovine animals. Watson and his collaborators,[10 11] however, assert that B C G cannot be regarded as entirely innocuous for cattle, since the vaccinal lesions are sometimes pathogenic for guinea-pigs.

Dreyer and Vollum[12] have reported in The Lancet that B C G may acquire virulence when grown in the depth of broth. Two strains were tested. The deep bouillon subcultures of B C G (I) produced progressive tuberculosis in all the guinea-pigs and rabbits inoculated. No animal tests were apparently made to establish the avirulence of the culture suspension actually used to sow the first series of broth flasks and it is not certain therefore that the virulence was acquired in the broth. The experiments with the second strain (B C G 359), which have given irregular results, are incomplete and no final conclusion can be drawn until the characters and virulence of the bacilli recovered from the inoculated animals have been ascertained.

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* The term Bacillus Calmette-Guérin or B C G was applied by its originators to this special strain of the tubercle bacillus.

EFFICACY OF THE VACCINE.

The appraisement of the efficacy and duration of immunity following B C G vaccination has led to much discussion and the problem cannot be regarded as solved. The preliminary experiments of Calmette and Guérin[1 4] on young cattle indicated that after vaccination these animals possessed a solid immunity against a test dose of virulent organisms. Subsequent experiments on smaller animals has shown that it is necessary to recognise a distinction between experiments in laboratory animals and those in the bovine species. It seems to be clear that in rodents, the immunity persists for a few weeks at most. Some observers doubt whether B C G offers any protection to these animals.

Numerous observers have now completed experiments on calves on lines simlar to those of Calmette and Guérin with rather varying results. Rankin[13] and his collaborators vaccinated 60 calves and kept 50 as controls. After a year 25 vaccinated and 25 controls were tested by the intravenous route. Six controls died of generalised tuberculosis; the others, killed after three and a half months, presented more or less active lesions. One of the vaccinated animals died of acute tuberculosis; the rest were killed after 15 months, when four showed several small calcified or healed lesions. Twenty-five vaccinated and 25 controls were placed in an infected herd and fed on infected milk. Five of the controls died of tuberculosis; the remainder when slaughtered showed active caseating lesions. Seventeen of the vaccinated animals were entirely free from lesions, whilst eight had small non-progressive lesions.

Lange and Wethmar[14] vaccinated calves and sheep by feeding and by subcutaneous inoculation with B C G. In two experiments with new-born calves and lambs vaccination by feeding failed to protect against a relatively weak intravenous infection four to six months later. Also, vaccination by subcutaneous inoculation failed completely in some animals, in spite of the use of an attenuated test strain of bovine bacilli. The majority of the subcutaneously vaccinated animals, however, showed a considerable degree of resistance to such a weak test strain, though not sufficient to inhibit the production of lesions.

Forssner[15] and his co-workers tested vaccinated calves 8–12 months later and concluded that B C G gave a certain protection but not so much as Calmette claims. King[16] tested 16 vaccinated and 17 control calves by subcutaneous or intravenous inoculation; the vaccinated animals developed more or less progressive lesions but they were less extensive than in the controls. Analogous results have been obtained by Gerlach,[17] Ascoli,[18 19] Tzechnovitzer,[6 7] and Haring, Traum, Henry and Hayes,[20] &c. Shroeder and Crawford[21] concluded that vaccination with B C G merely inhibits the extension of the tuberculous infection. Watson and his co-workers,[8 10 11] have reported even less favourably on the efficacy of vaccination. They admit that in trials of short duration, B C G seems to exert a retarding action on the development of the lesions, but in longer trials it fails to confer any appreciable immunity.

The efficacy of B C G under ordinary farm conditions has also been reported upon by several workers. For example, Brinet[22] over a period of six years vaccinated 300 calves which were maintained in infected buildings. Of these animals, 35 of four years or over were slaughtered without any sign of a tuberculous lesion which would cause a condemnation of the carcass by a meat inspector. A single animal was affected with acute tuberculosis, but this had not been vaccinated until a month after birth.

Ascoli[19] has vaccinated more than 3000 animals by the subcutaneous route and the results, controlled by post-mortem examination, are stated to have been very satisfactory.

The Authors' Experiments.

Two preliminary immunity experiments performed by one of us (A. S. G.) in 1926, one with B C G and one with attenuated human bacilli, showed that the resistance of a calf could be raised to such a degree as to enable it to resist completely the intravenous inoculation of 1·0 mg. of fully virulent bovine bacilli. In view of this result and having in mind the great economic importance of an entirely effective method of immunising calves to withstand infection under natural conditions, it was deemed desirable to pursue the inquiry further. The following experiments were accordingly undertaken in order to ascertain whether or not vaccination with B C G can be relied upon to raise the resistance of calves to tuberculosis and the best method to employ.

At first an attempt was made to obtain calves a few days old from herds supposed to be free from tuberculosis. This was found to be impracticable for several reasons, and later animals were purchased from various sources, kept for several weeks and before vaccination submitted to the double intradermal tuberculin test. Although this procedure differed from that recommended by Calmette and Guérin it was felt that, if found satisfactory, it could be more readily applied on a large scale under farm conditions in this country than the original method. Owing to the difficulty in obtaining suitable calves it was not possible at first to carry out the experiments on a large scale, and this fact also accounts for the irregularity which is apparent in some instances in the intervals between the administration of the vaccine and the resistance tests.

Effects of B C G.

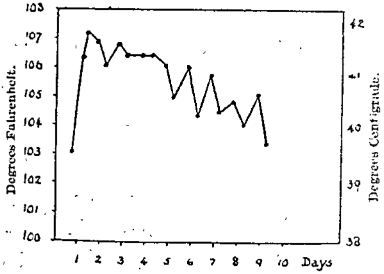
Normal calves.—Three calves inoculated intravenously died or were killed 21, 27, and 106 days after injection; the autopsies showed no macroscopic tuberculous lesions; B C G was recovered in culture from the first two calves but not from the last. One calf inoculated subcutaneously died 47 days later; the autopsy showed an encapsulated caseous and softened local lesion and no sign of disease elsewhere; B C G was recovered in culture from the local lesion and the prescapular and bronchial glands.

Two calves were fed with B C G; one died 76 days, the other was killed 72 days, after the last dose; neither showed any sign of tuberculosis; cultures from the mesenteric glands did not yield colonies of B C G.

The 51 vaccinated calves were all in good health and condition when injected with the test bacilli. Ingestion or subcutaneous inoculation of B C G did not affect the general health of the calves. Intravenous inoculation of small doses of B C G also was generally well borne, and in a few instances only caused a slight rise of temperature for a day or two beginning 18 to 24 hours after injection. Large doses given intravenously usually caused illness, with increased respiration and pyrexia, beginning 21 to 24 hours after injection and lasting about a week. The symptoms passed off and the calf was generally perfectly well again three weeks after inoculation.

One calf (calf 61, fifth series) reacted strongly to the initial intravenous dose (10·0 mg.) of B C G, the temperature rising to 104° F. at the fifteenth hour and remaining high for two days. The calf died 19 days later and was found to have spontaneous tuberculosis.

FIG. 1.



Temperature chart following second vaccination. 110 mg. B C G iv. given at 3 P.M. on first day.

Vaccinated calves.—A second injection of B C G given three weeks to a month after the first was not infrequently followed by an acute rise of temperature, increased respiration, and general malaise, sometimes grave, the symptoms lasting about a week and then gradually subsiding (Fig. 1).

Resistance of Vaccinated Calves.

The intravenous inoculation of the test bacilli produced in the great majority of the B C G vaccinated calves an acute febrile reaction with general malaise. The temperature began to rise at 15 to 18 hours, and was maintained at a high level (maximum sometimes over 107° F.) for one to three days. The reaction was similar to but more prolonged than that produced by the subcutaneous injection of tuberculin in a tuberculous animal.

In untreated calves after intravenous inoculation of living virulent tubercle bacilli the temperature does not generally begin to rise until the end of the first or the beginning of the second week, after which it is maintained at a high level until the death of the calf.

Method of testing resistance.—As a result of experience gained from the preliminary experiments it was decided to test the calves by the same method of injection and with the same dose of bovine bacilli. The test bacilli were taken from young—5 to 7 days old—actively multiplying serum or egg cultures and were finely emulsified in salt solution. One milligramme of culture has been estimated to contain at least 40 million bacilli. Calves inoculated intravenously with 1·0 mg. of virulent bovine bacilli die of miliary tuberculosis and consolidated lungs in an average period of 20 days. Experience showed that the test was too severe to bring out clearly the slighter grades of increased resistance in young calves; the dose was, therefore, reduced for the later series of experiments to 0·25 mg. While the severity even of this test was appreciated it was felt that animals which were relatively resistant to such enormous doses might resist altogether the much milder infection normally met with under natural conditions.

Preparation of the vaccine.—The cultures of B C G were grown upon coagulated 5 per cent. glycerin egg and used when they were from 3 to 7 days old. The growths were carefully lifted from the medium with a platinum spatula, placed in a tared bottle or tube and weighed. On glycerin egg B C G grows luxuriantly, producing dry crumbly masses which must be brought into a fine suspension before administration. This was done as follows.

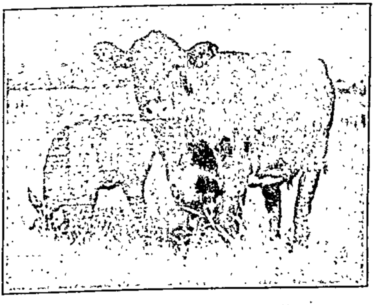
A convenient amount of the culture was taken and thoroughly ground between sterile ground glass plates with 2 or 3 drops of sterile salt solution; a thick, smooth, creamy paste was thus produced which was thinned by the gradual addition of salt solution, and then pipetted off into a test-tube; more culture was taken and the procedure was repeated until all the culture was emulsified; the thick suspension was then diluted with salt solution to the desired strength. In this way a fine homogeneous suspension can be made which is altogether free from coarse clumps of bacilli.

FIRST SERIES.

Towards the end of 1927 six calves were vaccinated with B C G, one by intravenous and two by subcutaneous inoculation and three by feeding. Two of the calves died and one was killed during the period of immunisation. The protocols of these calves are given elsewhere. The remaining three vaccinated calves together with two untreated calves, one of which had reacted to tuberculin, were tested as to their resistance to tuberculosis on Feb. 13th, 1928, by the intravenous inoculation of culture of a highly virulent bovine virus (No. 18 B.V.), the dose for each calf being 1·0 mg. The results are summarised in Table I.

Summary.—The normal control calf died in 16½ days of red hepatisation and severe miliary tuberculosis of the lungs; the thoracic glands were extensively tuberculous, and the liver and spleen showed early foci.

FIG. 2.



Heifer 3 and her calf (July, 1930).

Calf 11, which had reacted to the double intraderma tuberculin test, was included in the series for the purpose of comparing the reaction and effects produced by intravenous inoculation of living tubercle bacilli in a spontaneously tuberculous calf with those in a normal calf and vaccinated calves. The calf exhibited the phenomena of hyperallergy; the temperature rose to 107° F. on the day following the test dose, and was maintained at a high level until the death of the calf eight days later from acute pneumonia. At the necropsy a small tuberculous spontaneous lesion was found in a retropharyngeal gland.

Calf 5, vaccinated by subcutaneous injection, lived three days longer than the normal control and showed severe tuberculosis of the thoracic organs and no macroscopic lesions elsewhere. The resistance of this calf was little, if at all, higher than that of the control.

TABLE I.—*First Series.*

No. of calf.	Method of vaccination.	Dose of B C G.	Duration of life after resistance test.	Result.
3	Ingestion by pipette.	1·0 g. in 6 doses. Nov. 28th to Dec. 5th, 1927.	3 years.	Alive and in good condition February, 1931.
4	Intravenous.	10·0 mg. Nov. 29th, 1927.	D. 41 days.	Severe tuberculous caseating pneumonia; thoracic glands enlarged, no caseation. No macroscopic lesions elsewhere.
5	Subcutaneous.	100·0 mg. Dec. 8th, 1927. 250·0 mg. Jan. 18th, 1928.	D. 19½ "	Lungs extensively consolidated and closely beset miliary tubercles. Thoracic glands enlarged, firm, showed early caseation. No lesions visible elsewhere.
11	Reacted to tuberculin.	—	D. 8 "	Acute pneumonia.
12	Normal control.	—	D. 16½ "	Consolidation and submiliary tuberculosis of lungs. Thoracic glands greatly enlarged. Minute grey foci in liver and kidneys.

Calf 4, vaccinated by a single intravenous injection, died in 41 days of tuberculous pneumonia; there were no macroscopic lesions in the abdominal organs or in the peripheral lymphatic glands. The resistance of this calf was definitely increased, though the increase was not of a high order.

Calf 3, on the other hand, which had been fed with B C G, exhibited a high degree of resistance. She showed no symptoms of illness after the test dose and the temperature did not begin to rise until the twenty-first hour; the maximum, 105·4°, was attained in 24 hours, at which level it remained for 24 hours and then gradually subsided. The calf grew into a fine heifer, and in February, 1930, two years after the test, gave birth to a heifer calf which is alive (February, 1931) and does not react to tuberculin (Fig. 2).

The result in this last case is of peculiar interest since the latter calf was reared entirely on the milk of its mother and observations have shown that following intravenous administration of virulent tubercle bacilli the organisms not infrequently rest for long periods in the mammary glands to be excreted during the lactation period.

SECOND SERIES.

This series comprised ten calves, of which eight were vaccinated with B C G by various methods and two were untreated. The resistance of the calves was tested on May 22nd, 1928, by the intravenous inoculation of 1·0 mg. of No. 18 B.V. The details of the vaccinations and results of the resistance test are summarised in Table II.

Summary.—The control calves died in 15½ days of miliary tuberculosis of the lungs, the thoracic glands showing moderate enlargement; in one calf the liver and kidneys showed indefinite grey foci.

Five of the vaccinated calves (two vaccinated intratracheally with small doses, one subcutaneously, and two by feeding in the ordinary way) died in from 19 to 33 days of tuberculosis of the lungs and thoracic glands, the abdominal organs except in calf 8 also showing early foci. These calves therefore showed only slightly higher resistance than the two untreated controls.

On the other hand, three calves, one vaccinated by intravenous inoculation, one by subcutaneous inoculation, and one by feeding by the pipette method, exhibited a much higher degree of resistance to the test bacilli. Two of these calves were killed 128 and 251 days after the test dose, because they were having fits. The autopsies showed tuberculous meningitis, but elsewhere the lesions were slight and retrogressive.

The highest degree of resistance was again manifested by a calf (No. 7) which had been vaccinated by the pipette method of giving the vaccine. Calf 7 received altogether 2·15 g. of B C G and remained well for 18 months after the test dose of virulent bacilli. The heifer then began to have trouble with the joints, which increased, and at last prevented her from getting up without assistance. She was therefore killed, having lived 648 days after the test bacilli were injected. At the autopsy the most interesting finding was in the mamma, the two hind quarters of which showed the cisterns, ducts, and canals distended with thick creamy pus which microscopically showed very numerous tubercle bacilli. Culturally, the bacilli were of the bovine type. There were a few small chronic nodules in the thoracic glands and widespread but not advanced serous tuberculosis which was, we think, the result of extension of the infection from the mamma and supramammary lymphatic glands, since the peritoneum was more extensively affected than the pleura. The right knee and hock were greatly

TABLE II.—*Second Series.*

No. of calf.	Method of vaccination.	Dose of B C G.	Duration of life after resistance test.	Result.
7	Ingestion by pipette.	2·0 g. in 8 doses. Feb. 3rd to 28th, 1928.	K. 648 days.	Serous tuberculosis, not advanced. Four small nodules in thoracic glands. T. of mamma and one supramammary lymphatic gland and some joints.
13	Ingestion in food.	2·150 g. in 11 doses. Mar. 17th to Apl. 30th.	D. 26·5 "	Acute tuberculosis.
14			D. 24·5 "	" "
15	Intratracheal.	10·0 mg. Mar. 31st. 50·0 mg. Apl. 26th.	D. 28 "	" "
16	"	50·0 mg. Apl. 2nd.	D. 19 "	" "
8	Subcutaneous.	50·0 mg. Feb. 7th. 250·0 mg. Mar. 13th.	D. 33 "	Lungs partly hepatised (red) and partly pinkish-grey; definite tubercles sparse. Thoracic glands irregular, yellow foci in places aggregated.
9	"	100·0 mg. Feb. 7th. 200·0 mg. Mar. 14th.	K. 128 "	T. of meninges. Disease elsewhere not severe.
10	Intravenous.	10·0 mg. Feb. 11th. 20·0 mg. Mar. 16th.	K. 251 "	T. of meninges. Disease elsewhere slight and retrogressive.
17 18	Control.	—	D. 15·5 "	Acute T. of thoracic organs.

larged, distended with synovial fluid, and showed large osions of the cartilages. A culture from the synovial aid of the left hock grew one colony of bovine tubercle icilli.

THIRD SERIES.

In the first two series of experiments two calves hich had been fed with B C G by the pipette method -total dose in one instance 1·0 g. and in the other ·1 g.—exhibited a high degree of resistance to the ntravenous inoculation of 1·0 mg. of virulent bovine ıbercle bacilli, which killed untreated calves in ss than 17 days. On the other hand, two calves fed ith B C G in the ordinary way, that is, by giving the accine mixed with the milk, the total doses exceeding ·0 g., showed only a very slightly increased resistance.

TABLE III.—*Third Series.*

No. of calf.	Method of vaccination.	Dose.	Periods of vaccination.	Duration of life in days.	Result.
21	Ingestion by pipette.	2·050 g. B C G 10 doses.	July 30th to Aug. 20th, 1928.	D. 22	Lungs extensively consolidated and beset with miliary tubercles. Thoracic glands extensively tuberculous.
23	„	1·500 g. B C G 10 doses.	Aug. 1st to 20th, 1928.	D. 22	
25	„	1·000 g. B C G 10 doses.	Aug. 8th to 29th.	D. 26	
26	„	0·500 g. B C G 10 doses.	Aug. 8th to 29th.	K. 490	*Nodular tuberculosis lungs and thoracic glands.* T. of serous surfaces.
22	„	0·500 g. atten. hum. 10 doses.	Aug. 3rd to 27th.	D. 8	Red hepatisation of lungs, no tubercles. Thoracic glands enlarged.
24	„			D. 35	Consolidation and miliary tuberculosis of lungs. Thoracic glands enlarged and caseating.
27	„	0·500 g. atten. avian. 10 doses.	Aug. 8th to 31st.	D. 17	Lungs extensively hepatised and closely beset miliary tubercles. Thoracic glands tuberculous.
28	„			D. 21	As Calf 27, with early T. of a portal gland.
29	Intravenous.	5·0 mg. B C G 10·0 mg. „ 50·0 mg. „	Aug. 23rd. Aug. 30th. Sept. 13th.	D. 22	Lungs extensively hepatised and closely beset miliary tubercles. Thoracic glands enlarged and caseating, less advanced than in 28.
30	„	10·0 mg. „ 50·0 mg. „	Aug. 23rd. Sept. 13th.	D. 73	*Extensive lobular caseating pneumonia.* Thoracic glands large and caseating. No macroscopic lesions elsewhere.
D.	„	10·0 mg. „ 100·0 mg. „	Aug. 7th. Aug. 30th.	D. 636	Death during parturition. Thoracic glands. few calcareous foci. Some foci in kidneys and one nodule on cord.
19	Control.	—	—	D. 27	Lungs extensively emphysematous, consolidated and closely beset miliary tubercles. Thoracic glands much enlarged and extensively caseated. Early T. of kidneys and portal glands.
20	„	—	—	D. 26	Lungs and thoracic glands as in Calf 19. Nothing definite elsewhere.

We thought that the higher degree of resistance of the pipette fed calves might be the consequence of greater absorption of the B C G by the pipette method than after ingestion with the food, as a result of the bacilli remaining a longer time in contact with the mucous membrane of the mouth and pharynx, and perhaps also of insufflation of some of the bacilli into the lungs. We decided to test the pipette method of giving the vaccine on a larger number of animals, and in this third immunity experiment we fed four calves with doses of B C G ranging from 0·5 to 2·0 g. At the same time and in the same manner we fed two calves with an attenuated avian strain and two calves with an attenuated human strain. In addition, three calves were vaccinated by intravenous injection. The vaccinated calves together with two untreated calves were tested on Nov. 8th, 1928, each receiving intravenously 1·0 mg. No. 18 B.V.

Summary.—It will be seen from Table III. that three of the calves vaccinated by feeding with B C G died of acute tuberculosis of the lungs and thoracic glands rather sooner than the controls. The fourth calf, No. 26, which received the smallest dose of B C G, resisted the intravenous inoculation of 1·0 mg. of bovine tubercle bacilli.

This calf, after remaining in good health for more than a year, began to show signs of weakness in the hind quarters. As he did not improve he was killed 490 days after the resistance test. The autopsy showed chronic nodular tuberculosis of the lungs and thoracic glands and tuberculosis of the serous surfaces rather more extensive on the peritoneum and pericardium than on the pleura. No tubercles were seen on the brain or cord; the membrane over the pons was somewhat gelatinous, and there seemed to be a slight excess of cerebro-spinal fluid.

The two calves fed with the avian strain also died more quickly than the controls.

One *of the two calves fed with the attenuated human* strain died in eight days of acute pneumonia (cf. reactor Series 1); the other lived 35 days, that is, eight days longer than the longest lived control, and showed miliary tuberculosis of the lungs and tuberculosis of the thoracic glands without visible lesions elsewhere.

Of the intravenously immunised calves, one died in 22 days of acute tuberculosis similar to that in the controls, another died 73 days after the resistance test inoculation, and showed extensive lobular caseating pneumonia and enlarged caseating thoracic glands; there were no tuberculous lesions elsewhere.

The third intravenously immunised calf resisted the inoculation of the test bacilli and developed into a fine heifer. She was sent to the bull and became pregnant. Two or three months before she was due to calve she began to manifest *slight weakness of the hind quarters*; this gradually increased, and at last prevented her from getting on her feet. As her time was nearly up she was kept in the hope of securing a living calf, but she died as a result of hypostatic congestion of the lungs, labour having just begun. The autopsy showed a small nodule on the ventral surface of the lumbar cord which was the cause of the paresis of the hind quarters; besides this there were a few chronic lesions in thoracic glands and kidneys and on

TABLE IV.—*Fourth Series.*

No. of calf.	Method of vaccination.	Dose of B C G.	Dates of vaccination.	Duration of life in days.	Result.
31	Ingestion in food.	2·012 g. 16 doses.	Oct. 31st to Jan. 30th, 1929.	K. 273	Scattered tubercles in thoracic glands and early tuberculous meningitis.
32	"	"	"	K. 213	Slight chronic G.T. and tuberculous meningitis.
33	Intratracheal.	0·775 g. 5 doses.	Oct. 31st to Jan. 5th, 1929.	D. 97	Extensive chronic tuberculosis of lungs and thoracic glands.
35	"	0·925 g. 5 doses.	Oct. 31st to Jan. 9th, 1929.	Alive.	—
39	Intravenous.	12·0 mg. 100·0 mg.	Dec. 10th, 1928. Jan. 7th, 1929.	K. 316	Three tuberculomata in spinal cord. Caseation of an iliac gland on each side. Otherwise normal.
40	"	"	"	K. 570	Chronic disseminated tuberculosis not severe. Nodules on cord and in brain and slight meningitis.
42	"	"	"	D. 35½	Severe T. lungs and thoracic glands.
36	Ingestion in food.	Equine strain. 50·0 mg. 50·0 mg. 70·0 mg.	Nov. 6th, 1928. Dec. 6th, 1928. Jan. 8th, 1929.	K. 381	No sign of tuberculosis. Guinea-pigs inoculated with mediastinal, retropharyngeal, and mesenteric gland emulsions remained healthy (111 days).
47	Control.	—	Mar. 11th, 1929.	D. 21½	Acute severe tuberculosis of lungs and thoracic glands; minute foci in other organs.
48	"	—	"	D. 18½	Acute severe tuberculosis of lungs and thoracic glands; grey foci in liver.

the visceral pleura. The calf in utero was full-term and on autopsy was perfectly normal.

FOURTH SERIES.

In this series there were ten calves. Seven were vaccinated with B C G (two by ingestion, two intratracheally, and three intravenously); one was vaccinated by feeding with an attenuated equine strain and two were controls. They were tested as to their resistance to tuberculosis on March 11th, 1929, by the intravenous injection of culture of No. 18 B.V. Six vaccinated and the two control calves received each 0·25 mg. of the test bacilli; the remaining two (B C G intrav.) vaccinated calves received 0·5 mg. and 1·0 mg. respectively.

Summary.—The two control calves died of acute tuberculosis in 18½ and 21½ days. (Table IV.)

Of the three intravenously vaccinated calves one which received the same test dose as the controls died in 33½ days of miliary tuberculosis of the lungs with consolidation and tuberculosis of the thoracic glands. One which received double the test dose, after remaining perfectly well for nine months, developed paresis of the hind limbs, and on that account was killed 316 days after the test injection. At the autopsy a tuberculoma 2·5 by 2 cm. was found lying between the dura mater and the dorsal cord. In the spinal canal outside the dura 3 cm. anterior to the tuberculoma there was a hempseed-sized tuberculous nodule lying on the nerves at their point of issue. In a similar situation level with the fifth cervical vertebra there was a pea-sized caseo-purulent nodule in which tubercle bacilli were not found. One iliac gland on each side was enlarged to the size of a French plum and was tensely filled with caseo-pus (cultures of bovine type obtained). There was no sign of tuberculosis elsewhere. Emulsions of the bronchial, portal, mesenteric, and retropharyngeal glands and washings from the mammary sinuses did not produce tuberculosis in guinea-pigs. The third intravenously vaccinated calf, which received four times the amount given to the control calves, was killed 570 days after the test dose

TABLE V.—*Fifth Series.*

No. of calf.	Method of vaccination.	Dose of B C G.	Dates.	Duration of life after resistance test.	Result.
54	Intravenous.	10·0 mg. 100·0 mg.	Aug. 21st. Sept. 11th, 1929.	D. 47 days.	General tuberculosis, severe in lungs and thoracic glands.
56	"	"	"	Alive Feb., 1931.	—
57	"	"	"	D. 317 days.	Three nodules in a kidney and tuberculous meningitis.
59	"	"	"	K. 257 "	Slight tuberculosis of kidneys. Severe tuberculous meningitis.
55	"	10·0 mg. 50·0 mg.	Aug. 21st. Sept. 17th.	K. 215 "	Some chronic foci in thoracic and mesenteric glands. Tuberculous meningitis.
60	"	"	"	K. 92 "	Chronic, not severe, pulmonary tuberculosis. Slight tuberculosis of thoracic glands and a kidney.
62	"	"	"	D. 47 "	Miliary tuberculosis of lungs and hyperplasia of thoracic glands.
51	Control.	—	Nov. 27th.	D. 27 days.	General tuberculosis severe in lungs and thoracic glands.
52	"	—	"	D. 33 "	G.T. similar to that in Calf 51.
50	"	—	"	D. 39 "	As in Calf 52, but lesions a little larger and more caseous.
49	"	—	"	D. 60 "	Extensive lobular caseating pneumonia. Thoracic glands moderately enlarged, cortices caseous and gritty. Elsewhere scattered tubercles.

because of paresis of the hind quarters. The autopsy howed very slight hypertrophy of the lymphatic fringes on the pleura and peritoneum, and a number of loosely pedunculated firm caseo-calcareous nodules up to a broad bean in size on the pericardium; in the lungs there were about 18 nodules, 0·5 to 3 cm. in diameter, with fibrous and softened gritty contents; the thoracic glands were largely replaced by cheesy caseous substance; the kidneys were tuberculous and also the left eye; there were three nodules outside the cord, one on the pia mater of the cord, and a number of chronic caseous tubercles on the meninges of the base of the brain.

TABLE VI.—*Sixth Series.*

No. of calf.	Method of vaccination.	*Dose of B C G.*	Duration of life *after resistance test* in days.	*Result.*
63	Intravenous.	10·0 and 100·0 mg., interval 3 weeks.	Alive Feb., 1931.	—
64	"	"	K. 315	Pleural (left side) and peritoneal tuberculosis. Scattered tubercles in spleen. Moderately severe T. of kidneys. Severe and extensive tuberculous meningitis. A few glands showed chronic tuberculosis.
65	"	"	Alive Feb., 1931.	—
66	"	"		
70	"	"	K. 174	Serous tuberculosis, not advanced. Discrete tubercle in thoracic glands. Tuberculous meningitis.
71	"	"	Alive Feb., 1931.	—
72	"	"	K. 262	Widespread T. of peritoneum not advanced. "Perlsucht" of pericardium. Slight T. of kidneys. Tuberculous *meningitis.*
73	"	"	K. 245	Generalised nodular tuberculosis, not severe. Tuberculosis of bones of skull and a vertebra. One nodule on crus cerebri.
74	"	"	K. 45 (ill).	Extensive consolidation and miliary tuberculosis of lungs. Thoracic glands moderately enlarged, fibroid showed a few yellow foci. Kidneys, slight medullary tuberculosis. *Pharyngeal gland, a caseous tubercle.*
75	"	"	D. 69	Advanced lobular caseating tuberculous pneumonia; extensive T. of thoracic glands and slight G.T.
78	"	"	K. 63 (dying).	Extensive lobular caseating pneumonia, chiefly of caudal lobes thoracic glands hyperplasic, few areas of caseation.
79	"	"	K. 132 (ill).	Disseminated *tuberculosis* severe *only in thoracic glands and* meninges.
76	"	10·0 and 75·0 mg.	Alive Feb., 1931.	—
77	"	"	K. 241	Tuberculous *meningitis and slight* retrogressive G.T.
82	"	"	D. 60	Tuberculous pneumonia; thoracic glands enlarged and caseating; two tubercles in kidneys.
83	"	"	K. 38 (dying).	Severe miliary T. of lungs; thoracic glands enlarged, showed relatively slight caseation.
80	"	10·0 and 50·0 mg.	D. 35½	Severe *miliary T. lungs; pleural effusion; thoracic glands* hyperplasic, relatively slight caseonecrosis.
81	"	"	K. 237	Tuberculous meningitis and slight retrogressive G.T.
84	"	"	D. 64	Tuberculous pneumonia; thoracic glands hyperplasic; three nodules in kidneys.
67	Control.	—	D. 18½	Almost complete *consolidation and profuse miliary tuberculosis* of lungs; thoracic glands enlarged and caseating; liver showed moderate number, kidneys, a few grey tubercles.
68	"	—	K. 25 (dying).	Lungs extensively hepatised and closely beset with *miliary* tubercles; thoracic glands enlarged and extensively caseated. Spleen and kidneys scattered tubercles; liver and portal glands. moderate number. All other lymphatic glands contained miliary tubercles.
69	"	—	K. 24 (dying).	G.T. similar to that in Calf 68.

Of the two intratracheally vaccinated calves one died in 97 days of thoracic tuberculosis, the lungs being extensively replaced by tuberculomatous masses. The other is alive and a well-grown heifer, but has a tuberculous left fore quarter of the udder. On Oct. 31st, 1930, she gave birth to a heifer calf which has been vaccinated and is sucking.

Of the two calves vaccinated by ingestion of B C G with the food, one was killed 213 days after the test because of meningitis, and was found on autopsy to have chronic general tuberculosis, interesting features being complete obliteration of the pericardial sac with a thick layer of tuberculous tissue and large nodules in the heart muscle. The second *calf* had a fit and was killed 273 days *after the* test dose. The thoracic glands contained scattered calcareo-caseous tubercles but other organs and glands were perfectly normal, there *was some excess of* cerebro-spinal fluid, and there was gelatinous substance in the medulla; no tubercles were, however, detected; the spinal fluid *produced tuberculosis* in a guinea-pig.

The calf vaccinated by feeding with an attenuated equine *strain* was killed 381 *days after the* test and was found to be free from tuberculous lesions and living tubercle bacilli. The immunity conferred on this calf was therefore absolute.

FIFTH SERIES.

In July, 1929, a batch of ten calves was obtained. They were tested with tuberculin by the double *intradermal test and none reacted.*

First vaccination.—On August 21st, 1929, the ten calves were intravenously injected each with 10·0 mg. B C G. (Table V.)

One of the calves (No. 61) died 19 days later of spontaneous tuberculosis, the right lung and the thoracic glands showing extensive tuberculosis and the glands on the right side more advanced caseation than those on the left. The left submaxillary gland showed grey areas in the cortex *in an early stage of caseation.* Dysgonic cultures were obtained from a thoracic gland. A few colonies of B C G also appeared. The temperature of this calf rose to 104·8° F. at the fifteenth hour after the vaccination and was high (maximum 105·4°) for three days; afterwards it was intermittent. Another calf (No. 53) fell away in condition, developed diarrhœa, and died 27 days after the injection; the autopsy showed no tuberculous lesions; B C G was recovered in pure culture from the bronchial and portal glands.

Second vaccination.—On Sept. 11th, three weeks after the first dose, four calves were injected intravenously each with 100 mg. B C G. On the 17th the four remaining calves were injected intravenously each with 50 mg. B C G. One of the latter (No. 58) died four days later of pneumonia; there was no sign of tuberculosis.

Resistance test.—On Nov. 27th, 1929, the seven surviving vaccinated calves and two untreated calves were inoculated intravenously each with 0·25 mg. of culture of bovine bacilli (Nos. 20 and 25 B.V. mixed). Two additional untreated calves received 0·1 mg. and 0·05 mg. of the same cultures.

Summary.—The two control calves which received 0·25 mg. of the test dose died in 27 and 33 days of general miliary tuberculosis, very severe in the lungs and thoracic glands. The two calves inoculated with 0·1 and 0·05 mg. died in 39 and 60 days of general tuberculosis severe in the lungs.

Of the vaccinated calves two died in 47 days of severe miliary tuberculosis of the lungs; in one the thoracic glands were also caseous, and there were scattered tubercles in other organs and glands; in the other the thoracic glands were hyperplasic, and there was no disease elsewhere. One calf was killed 92 days after the test because of generalised ringworm. The lungs were found to be moderately well filled with fibro-calcareo-caseous nodules and masses, some of which replaced whole lobules. The thoracic glands were slightly enlarged and indurated, and contained scattered caseous foci; the kidneys contained two tubercles. The other calves were killed 215 and 257 days after the test dose because of fits, and showed on autopsy well-marked tuberculous meningitis and slight chronic general tuberculosis.

One calf was killed 317 days after the test because of cerebral symptoms ending in coma. The autopsy showed extensive tuberculous meningitis, but no disease anywhere else except in the kidneys, which contained three small nodules.

The remaining calf is alive and in good condition one year three months after the test.

SIXTH SERIES.

This series comprised 22 calves. They were tested with tuberculin on Nov. 20th, 1929, and none reacted. Of the 22 calves, 19 were vaccinated in November and December by the double intravenous method. The first dose of B C G was the same for each calf—namely, 10·0 mg.; the second dose for 12 calves was 100·0 mg., the interval between the doses being 21 days in 10, and 24 days in two instances; the second dose for four calves was 75·0 mg. and for three calves it was 50·0 mg. 24 days after the first dose. The purpose of this series was to test on a larger scale than heretofore the double intravenous method of vaccination. The resistance of the 19 vaccinated and three untreated calves was tested on Feb. 25th, 1930, 92 days after the first vaccination, by the intravenous inoculation of 0·25 mg. Nos. 20 and 25 B. V. mixed.

Summary.—The three control calves died in 19, 24, and 25 days of general miliary tuberculosis, most severe in the lungs, which were hepatised. (Table VI.)

Of the vaccinated calves two died in 36 and 38 days of miliary tuberculosis of the lungs with tuberculosis of the thoracic glands, no tubercles being visible in the abdominal organs and other lymphatic glands.

One calf killed when ill 45 days after the test showed extensive tuberculous consolidation of the lungs and tuberculosis of the kidneys. Four calves died in 60, 63, 64, and 69 days of caseating tuberculous pneumonia; in addition there was slight generalised tuberculosis in two calves, three nodules in the kidneys of one calf, and no disease elsewhere in the fourth. Two calves were killed 132 and 174 days after the test because of fits, and were found to have well-marked tuberculous meningitis and chronic general tuberculosis of no great severity. Three calves were killed 237, 241, and 262 days after the test because of fits. The autopsies showed severe tuberculosis of the meninges and slight disseminated tuberculosis. One calf (No. 73) which had developed an internal squint was killed 245 days after the test. The autopsy showed tuberculosis of the bones of the skull—the frontal sinuses being filled with caseo-pus—and general nodular tuberculosis not severe. One calf was killed 315 days after the test because of cerebral symptoms. At the autopsy very severe tuberculous meningitis was found. A few glands were affected. The kidneys showed moderately severe medullary tuberculosis, and the spleen and left pleura sparsely scattered tubercles. There was moderately widespread tuberculosis of the peritoneum. Five calves are alive.

Summary of Experiments.

Fifty-one calves were vaccinated with B C G by various methods—10 by feeding, 4 intratracheally, 3 subcutaneously, and 34 intravenously—and were subsequently tested as to their resistance to tuberculosis, together with 14 untreated calves, by the intravenous injection of fully virulent bovine tubercle bacilli in doses ranging from 1·0 mg. to 0·25 mg. of culture. All the 65 calves had been previously tested with tuberculin by the double intradermal test and had not reacted.

CONTROLS.

Five control calves received each 1·0 mg. of bovine tubercle bacilli and died in from 15½ to 27 days (average 20 days) of acute miliary tuberculosis. Seven calves received each 0·25 mg. and died in from 18½ to 27 days (average 24 days) of general miliary tuberculosis. Two calves were inoculated with smaller doses—namely, 0·1 mg. and 0·05 mg. respectively—and died of severe general tuberculosis in 39 and 60 days. Vaccinated calves were not given doses of less than 0·25 mg. It may be said, therefore, that they received at least from 5 to 20 times the dose necessary to cause fatal general tuberculosis in normal calves.

EFFECT OF VACCINATION.

Feeding.—The vaccine was administered to six calves by pipette into the mouth in doses ranging from 0·5 to 2·1 g. Three of the calves showed no higher resistance than the controls, while the other three showed much higher resistance, amounting in one instance apparently to complete immunity. This animal subsequently had a calf (now 12 months old) which was reared entirely on its mother. It does not react to tuberculin and may therefore be presumed to be free from tuberculosis. Four calves were fed with B C G in the milk. The resistance of two of these calves was a little higher than that of the controls while that of the remaining two was much higher.

Subcutaneous inoculation.—Three calves were vaccinated in this way. One showed little, if any, increased resistance, and one showed slightly increased resistance. The remaining one exhibited a moderately high degree of resistance.

Intratracheal injection.—Four calves received directly into the trachea doses of B C G ranging from 50 to 925 mg. One of the calves which had received a single dose of 50 mg. was tested 50 days after vaccination and died 19 days later (controls 15·5 days). A second calf was vaccinated twice, the total amount of B C G being 60 mg. and died of tuberculosis 28 days after the test. A third calf which had received 775 mg. of B C G in five doses given during a period of 2½ months died 97 days after the test inoculation of tuberculosis limited to the thoracic organs. The remaining calf which also received five doses of B C G, the total amount, however, being 925 mg., exhibited high degree of resistance. The animal—a heifer—alive nearly two years after the test and has a calf.

Intravenous inoculation.—Thirty-four calves were accinated intravenously and all except one howed increased resistance, but there were great ndividual variations in the degree of resistance. ne calf which had been given a single small dose of C G exhibited only slightly increased resistance. hirty-two calves were vaccinated twice, the first dose f 10·0 mg. being followed 21 to 24 days later by 0·0 mg. in one instance, 50·0 mg. in seven instances, 5·0 mg. in four instances, and 100·0 mg. in 20 instances. leven of the 32 calves died or were killed when dying from 33½ to 73 days (average 52·3 days) of tuberulosis, severe in the lungs and thoracic glands, and ight or not apparent elsewhere.

One calf was killed on account of ringworm 92 ays after the test and showed chronic general tuberulosis not severe. Ten calves were killed because of eningitis 132 to 317 days (average 240 days) after he resistance test; besides tuberculosis of the eninges there were disseminated lesions in other arts of the body, for the most part slight and not rogressive.

One calf was killed 245 days after the test because f cerebral symptoms and showed tuberculosis of the ones of the skull and a vertebra and general nodular berculosis, not severe. One calf was killed 316 days fter the test because of paralysis of the hind limbs; he autopsy showed three tuberculomata in the cord ith secondary involvement of the iliac glands and no ign of tuberculosis elsewhere. Two calves lived 570 nd 636 days after the test; one showed on postortem examination slight retrogressive tuberculosis, he other moderate general tuberculosis. Five calves re still alive.

One calf was vaccinated three times, receiving 5, 10, nd 50 mg., the intervals between the doses being and 14 days. Tested eight weeks later the calf as less resistant than the controls. This is the only stance of no increased resistance after intravenous accination.

With regard to the degree of protection afforded by ifferent doses of B C G intravenously, it is interesting o note that only 50 per cent. of each group of calves accinated with 10 and 50 mg. and 10 and 75 mg. espectively showed a high degree of resistance to he test bacilli, whereas 75 per cent. of the 20 calves accinated with 10 and 100 mg. of B C G were highly esistant.

The actual cause determining the death of the great ajority of the resistant animals was tuberculosis of he central nervous system; this was due to the fact hat the test dose, consisting of a large number of ighly virulent tubercle bacilli, was injected intraenously, a few of the test organisms thus gaining ccess to the central nervous system where they were ble to produce lesions owing to the low degree of esistance common in this situation. The tuberculosis lsewhere was not severe.

These results are much more encouraging than may ppear at first sight. It must be remembered that lthough the test doses employed throughout the xperiments were exceedingly severe the life of 23 f the 51 vaccinated animals was prolonged for eriods ranging from eight months to three years, and he great majority of the remainder showed definitely ncreased resistance. There is little doubt that a ss severe test dose administered so as to resemble ore closely a natural infection would have given ore spectacular results. It is proposed to adopt he former course in future experiments, since we are ow satisfied that a high degree of immunity can be induced in calves when B C G vaccine is used in the most appropriate manner.

Conclusions.

(1) The strain of B C G used throughout these experiments would appear to be avirulent for the calf and incapable of giving rise to progressive tuberculosis, even when inoculated intravenously in large doses. (2) Whether given by the mouth or intratracheally, or by subcutaneous or intravenous injection B C G can raise the resistance of a calf to a virulent experimental infection. (3) An increase of resistance is less certain after feeding with B C G than after intravenous injection, though feeding with the vaccine may in some instances induce as high a resistance as injection into the tissues. (4) Intravenous injection, in our experience, has proved the most satisfactory method of vaccination with B C G. (5) The degree of increased resistance conferred upon calves by intravenous vaccination varies within wide limits, and appears in general to be directly proportionate to the dose of B C G vaccine.

DURATION OF INCREASED RESISTANCE.

Our experiments were, in the first instance, concerned with questions of the best method of administration and dose of B C G. The tests of resistance were made therefore after an interval when one might suppose that the resistance was at its highest level, that is from two and a half to three months from the beginning of vaccination. In future work we propose (*a*) to ascertain the duration of the increased resistance produced by intravenous vaccination; (*b*) to test the resistance of intravenously vaccinated calves against a natural mode of infection; (*c*) to compare the resistance produced by other antigens.

The cost of these investigations was borne by the Institute of Animal Pathology, and special grants from the Medical Research Council and Development Commission for the purchase and maintenance of experimental animals, and from the Empire Marketing Board for additional accommodation without which it would have been impossible to carry out the work.

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HOSPITAL SAVING ASSOCIATION REPORT.—In its report for the year ended July 31st, 1930, the Hospital Saving Association states that the number of contributors has increased to 810,144, and the amount of contributions to £438,354. Those treated during the 12 months number 238,029, and the revenue account for the year shows a credit balance of £22,233. The executive council recommend that a final distribution of £22,000 be made to coöperating hospitals, which will bring the total payment for hospital services to £325,781.

DISSECTING ANEURYSM OF THE AORTA.

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The clinical features of a dissecting aneurysm of the aorta, when the lesion is not immediately fatal, are not often of such a character that the diagnosis can be made. In the case here reported the signs and symptoms were so grouped together that the nature of the lesion might quite well have been suspected. The patient was suddenly struck down with acute pain between the shoulder-blades and rapidly became unconscious, with the features of acute circulatory failure, as from a coronary thrombosis or a ruptured aneurysm. He then recovered consciousness for a little while and complained of "pins and needles" in the legs; there were, however, no physical signs to suggest that a ruptured aneurysm was compressing the spinal cord. The pulse-rate remained persistently slow, about 56, throughout the seven hours during which he survived; this was tentatively ascribed to heart-block, but it was assumed that the block had existed before the final catastrophe and was not related to it.

Necropsy provided a single explanation of all the features. The sudden pain in the back and circulatory collapse were produced by a dissecting aneurysm at the upper end of the thoracic aorta, from which blood had extravasated along the aorta as far as the heart wall, causing heart-block, and down in the other direction at least as far as the beginning of the external iliac arteries, probably causing the peculiar sensations in the legs.

A Case Described.

The patient, who was a taxi-cab owner aged 61, had been treated by Dr. F. Curtis, of Redhill, for three years for noises in the head and dizziness, his blood pressure being 200 mm. Hg when he first came under observation in 1927. A year later the systolic blood pressure was about 160–170 mm. Hg, and the diastolic 140 mm. Hg; there was enlargement of the heart and a ringing aortic second sound. The urine was normal throughout, and at no time was there found any abnormality in the rate or rhythm of the pulse. Diminution of work and of his general activities was advised, and blood-letting was performed five or six times in the last two years. The improvement in his symptoms and blood pressure following this treatment was such that he was able to resume some of his former exertion. The end came suddenly and unexpectedly.

One day in May, 1930, having been in London, he had begun to drive his car homewards when suddenly severe pain seized him in the back, causing his to exclaim "Oh! I'm done!" The pain was about the level of the angles of the scapulæ. He was instantly brought to hospital in a car, but was unconscious on arrival at 6.55 P.M., about 20 minutes after the onset of the illness. He then presented the following features. He was a big-made, stout man who looked very ill, his face and hands being of a purplish, cyanotic colour. He was unconscious and could not be roused; but he moved all his limbs as well as the face and eyelids on each side. The skin was cold and bathed in sweat. The temperature was below 96° F. in the axilla and no pulse could be felt at the wrists. Emphysema obscured the cardiac area and the heart sounds were not definitely heard.

At 7 P.M. he was given oxygen by means of a tube and funnel, but this did not influence the cyanosis. The foot of the bed was raised, hot-water bottles were provided, and 5 minims of Curschmann's solution were injected subcutaneously. Brandy was given, but was rejected from the mouth. At 7.15 P.M. the radial pulse was just palpable at 56 per minute. 0·5 c.cm. of pituitrin was given subcutaneously. The pulse-rate rose to 60 at 7.30 P.M. but fell to 56 again. At 8 P.M. he was conscious and, though drowsy, was able to answer questions. His memory was good for events up to the time when he "felt faint in the car," after which he could recollect nothing. He complained of "pins and needles" in the legs, and wanted to lie on his left side. There was also slight epigastric pain. He could move all his limbs, and there was no gross loss of sensation in the legs, while the plantar reflexes were both flexor. There was cyanosis still, and the skin remained cold and moist. The pulse was of small volume at the left wrist (rate 56) and could not be felt at the right. The dorsalis pedis artery was pulsating in each foot. The systolic blood pressure was between 80 and 90 mm. of mercury. At 8.30 P.M. (the pulse-rate being still 56) calomel gr. 1 and brandy dr. 2 were given. At 9 P.M. the pulse-rate rose to 60 and he vomited an ounce of fluid. At 10 P.M. he was restless and trying to get out of bed to empty his bladder, but he did not pass urine when a receptacle was provided. He kept throwing off the bedclothes. There was some cyanosis, the pulse-rate was 56, and respiration-rate 20; from this time onwards the pulse-rate, counted every quarter of an hour, was 62, only once reaching 64; the pulse was small in volume and regular. At 10.30 P.M. calomel gr. 1 and pot. brom. grs. 40 were given, but he vomited. At 11.30 P.M. he was still restless, but the restlessness alternated with periods of inactivity, these synchronising with the hypopnœic phases of Cheyne-Stokes' respiration which had now developed. At midnight the pulse was 62 and the respiration-rate still 20. At 1.30 A.M. cyanosis increased. Oxygen and 5 minims of Curschmann's solution were given, but he died in coma at 1.45 A.M.

Necropsy.—There was much post-mortem degeneration owing to delay in obtaining the coroner's order. The body (14 st. 2 lb. and 6 ft. 2 in.) was very fat. The heart was enlarged, but it was not weighed separately from the aorta. There was a "milk-spot" on the posterior aspect of the base of the right ventricle, but the pericardium was otherwise normal, and there was a moderate amount of subpericardial fat. The ventricles were hypertrophied, the myocardium of the left being 2·2 cm. and of the right 0·6 cm. in thickness. There were yellow streaks suggesting fatty degeneration in some of the musculi pectinati in the ventricles. The valves were healthy save for a few minute fibrous tags on the convex surfaces of the aortic cusps. There were a very few small patches of atheroma in the aortic arch. A number of patches were present in the sinuses of Valsalva, but the plaques became larger and more numerous in the thoracic and abdominal aorta, with slight ulceration and pouching in the last. There was no sign of syphilis.

Nine centimetres below the origin of the left subclavian artery was a transverse rent in the intima of the right side of the aorta. The tear was 1·8 cm. in length, slightly convex downwards, and running obliquely through the wall, so that the lower margin was somewhat overhung by the upper, which contained a yellow atheromatous plaque. From this rent the blood had escaped outside the intima both downwards and upwards; there was a space containing post-mortem clot in the outermost part of the media all round the vessel, except at the back of the line of origin of the thoracic and lumbar arteries,[1] at the attachment of the cœliac, renal, and mesenteric vessels, and at the origins of the branches of the aortic arch. The extravasation extended downwards as far as the bifurcation of the common iliac arteries on each side—that is, at least as far as the post-mortem examination extended. In the other direction it reached the heart by entering the tissue between the aorta and right auricle and the interauricular septum. A bulge was formed in the septal wall of the right auricle, extending from a line 2 cm. to the left of the crista terminalis to the attachment of the septal cusp of the tricuspid valve and into the pars membranacea septi; and from the junction of the auricular appendix with the auricle to the valve of the coronary sinus. There were two small patches of antemortem clot on the endocardium covering this projecting hæmatoma. Nothing abnormal was visible in the wall of the left auricle. The coronary arteries were large and their walls very atheromatous and calcified.

Apart from a fatty liver and œdema of the lungs, the rest of the body and the brain were normal.

Microscopic examination.—A section taken from the ascending part of the arch of the *aorta* showed the media divided in its outermost part, there being fibrin and blood clot in the split, with a scanty cellular reaction in some adjacent parts of the media. Sections of the *heart* were examined from the region between the mouth of the coronary sinus and the membranous part of the septum. All showed extensive hæmorrhage with destruction of muscle-fibres, many of those remaining exhibiting hyaline change. No fibres of the conducting bundle could be identified.

Clinical Features.

Though the post-mortem findings in this case did appear to explain all the clinical phenomena, it is necessary to attempt their critical comparison with the features observed in other published cases of dissecting aneurysm in order to see whether the clinical symptoms could fairly be related to the lesions actually found.

PAIN IN THE BACK.

Sudden and intense interscapular pain is uncommon in dissecting aneurysm in the descending thoracic aorta. Was the pain therefore of definite localising value in this instance where the two uncommon features were combined? Pain in some part of the back is mentioned as a symptom in 19 out of the 121 published accounts of cases of dissecting aneurysms to which I have had access. Naturally, because death was often sudden, most of the published cases lack a detailed account of clinical symptoms. The list analysed is, moreover, incomplete because I did not deal with cases published in German. Even in 1921 Crowell[20] was able to compile a total list of 273 published cases, and it may incidentally be observed that in his group dissection of the descending thoracic aorta occurred in only 35·5 per cent. The following excerpts briefly indicate the character of the pain in the back in the 19 published cases referred to above.

Swaine[2] gives a detailed and vigorous description of the illness of a patient whose dissecting aneurysm arose "a few lines below the place where the left subclavian is given off," and extended at least as far as the common iliac arteries. The attack began with tearing pain in the chest, followed by pain darting from mid-sternum down the left of the spinal column to a point near the umbilicus. Later there was a repetition of "lancinating pain referred . . . to the posterior part of the thorax from scapula to scapula."

A patient, admitted to hospital[3] for lumbar pain and albuminuria and in whom pain became severe as if constricting the lower part of the chest, later complained of slight pain in the scapular region. Autopsy, after sudden death, revealed a rent in the inner coats near the origin of the aorta and dissection in the aortic wall for 30 cm., with terminal rupture into the pericardium.

A man[4] who had had pain in the back, diagnosed as "a sprain" or "lumbago," four days later suffered from pain in the chest and between the shoulders, and died of intrapericardial rupture of dissecting aneurysm. The lining of the aorta was torn in two places just above the aortic valves.

A rent in the inner coats, 2¼ in. below the origin of the left subclavian,[5] with dissection up to this vessel and down to the renal arteries, was associated with a "severe sprain of the muscles of the back," sustained while lifting a bucket of water seven days before death. The pain subsided in a few days, but the patient died suddenly with rupture of the aneurysm in the left pleura.

A rent ½ in. below the left subclavian artery,[6] with a 4 in. dissection and escape of blood into the left pleura, gave pain between the shoulders.

Pain at the left shoulder-blade,[7] whence it had moved from the cardiac and epigastric regions, occurred in a woman who died of rupture into the pericardium of a dissecting aneurysm extending into the innominate artery from a tear half an inch above the aortic valves.

Two saccular aneurysms of the abdominal aorta with a dissecting condition extending into the thoracic portion were found by Peabody[8] in a patient who had had severe pain in the back and right side for several months. During his stay in hospital for treatment of the epigastric tumour he died suddenly, following an attack of pain "in the region of the lower lobe of the right lung posteriorly." There was also a rupture into the right pleura and a hæmorrhagic infarction of the lower lobe of the right lung.

The loins are mentioned, among other situations in which pain occurred, in three cases, reported by Peacock,[9] Dickinson,[10] and Greenhow[11] respectively. In the first dissection extended from the commencement of the descending part to the origin of the aorta and to the common iliac arteries. In Dickinson's patient there was a tear half an inch above the valves, with spread of blood in the aortic wall as far as and incompletely through the thoracic aorta. The third case presented a large dissecting aneurysm of the abdominal aorta. Pain in the loins and along the back was felt for three days by an old woman[12] who had a saccular aneurysm at the termination of the abdominal aorta with dissection thence throughout the length of the vessel. Constant lumbar pain was a feature three hours after the beginning of an attack[13] in which a dissecting aneurysm, starting in the transverse part of the aortic arch, spread to the ascending portion and to the right common iliac artery. It ruptured into the mediastinum and pleura.

Pain in the back, the site of which is not more exactly stated, was associated with a tear half an inch above the valves[14] and dissection at least as far as the left subclavian, with tears in the transverse part and at the junction of the transverse and descending parts of the arch,[15] forming two distinct aneurysms, the second of which dissected to within two inches of the aortic bifurcation. Such pain was also described with intramural extravasation of blood through three rents in the aortic arch[16]; with an appearance of "double aorta" from the sinus of Valsalva to the iliac arteries[17] found some eight years subsequently; and with a slit in the upper aspect of the arch[18] from which separation had occurred as far as the abdominal aorta. In a case of recurrent pleurisy,[19] six months after the onset of dorsal pain, two dissecting aneurysms were found. One was old and extended to the diaphragm and upwards for 2 cm. from its origin in a rent 1 decimetre below the ductus arteriosus. The other was recent, and in the region of the inferior mesenteric.

In only three cases therefore—namely (refs. [2 5 6]), of the above-mentioned 19 cases who exhibited pain anywhere in the back with rupture—was this pain associated with a rent somewhere between the origin of the left subclavian artery and the diaphragm. Moreover, out of the total of 121 cases analysed there are 17 others with recorded clinical symptoms where the rent either arose in the descending thoracic aorta or where extravasation of blood into that part of the aorta occurred from a rent elsewhere; in none of these was pain in the back experienced. The data are summarised in the following table:—

No pain in back.	Pain in back.	Rent in d.t. aorta.	Extravasation in d.t. aorta from rent elsewhere.
—	3	3	—
—	16	0	9
6	—	6	—
11	—	0	11

d.t. = descending thoracic.

It therefore appears that pain between the shoulder-blades is not a frequent accompaniment of rents in the wall of the descending thoracic aorta, and that its occurrence cannot be assigned high localising value.

PULSE-RATE.

The pulse-rate in the present case, as soon as the patient had recovered from the shock and circulatory collapse to such an extent that the rate could be ascertained, remained persistently slow, at about 56. No galvanometer tracing was taken and the existence of heart block could only be conjectured.

A pulse may be slow for an hour or two as the result of vagal over-action in any condition of sudden pain and fainting shock. But in this case the slow rate was maintained after the patient emerged from shock, and it is known that the rate had been normal when the patient was previously under the care of his private doctor. In view of the extension of the hæmorrhage into the region of the heart where the conducting bundles lie, it appears probable that heart-block was actually so caused. For this I could find no parallel in the recorded cases. A pulse-rate less than the normal of 72 per minute is mentioned in only four of the 121 cases.

It was irregular at 62 in a man[21] aged 50 who was found to have syphilitic aortitis and a dissecting aneurysm arising from a plaque at the mouth of the right coronary artery. The separation of the coats extended to the common iliac vessels.

A woman of 67[7] whose ascending aorta and innominate artery were dissected from a tear half an inch above the valves had a regular, full pulse at 60 per minute 1½ hours after the onset of the attack.

Thompson's case,[21] a man of 45, had numerous syncopal attacks during which no pulse could be felt but, between these, rates of 80, 15, and 100 were recorded. The aneurysm stretched from a split half an inch above the aortic valves to the origin of the renal arteries.

In another case [13] of saccular aneurysm of the aortic termination with dissection throughout the length of the vessels, the pulse was irregular and varied in rate from 70 to 90.

Hæmorrhage into the interauricular septum is a rare condition. Maguire[22] described a swelling of the septum, filled with fibrin and blood-clot, communicating with an ulcerated area on the ventricular wall just below the aortic cusps. These latter were thickened and calcareous, and had on them "large masses of inflammatory material." No clinical history was available.

Pelvet [23] quotes a case from a publication by Dittrich [24] where a young woman who died with dropsy and pneumonia was found to have a pericardium full of blood which had issued out of a cavity the size of a pigeon's egg in the interauricular septum above the fossa ovalis. The aneurysm bulged into the left auricle and into the pericardium. There is no note of the pulse-rate

PAIN IN THE LEGS.

The sensation of "pins and needles" in the lower limbs was not an excruciating pain, but rather of the type that is associated with minor irritation or anæmia of the nerves. The extravasation of blood in the walls of the aorta and iliac arteries was not so great as to check the flow of blood within their lumen to the legs, for the dorsalis pedis arteries were pulsating fairly well. The pain was therefore not caused by inteference with blood flow, but it might have arisen in nerves from the walls of the iliac arteries into which blood was proved to have extravasated, if not lower down along the femorals, which were not fully examined at necropsy. Here the evidence cannot be regarded as more than suggestive. There is little clinical information from other sources as to the type and distribution of pain that may be felt when arterial coats are disturbed. Osler, in his admirable article on aneurysms,[25] states that in cases of dissecting aneurysm there may be "agonising pain along the course of all the arteries extending to the limbs."

Another possibility which might be advanced is an interference with the nerves of the lumbar plexus by extravasation of blood in their neighbourhood. But in this instance post-mortem examination proved that there was actually no leakage of blood outside the adventitia, and there could therefore have been no direct pressure on the main nerve trunks.

My thanks are due to Dr. Curtis, of Redhill, for details of the illness before admission to hospital, and to Dr. W. G. Barnard and Dr. Ronald Grant for help in the preparation and interpretation of the pathological specimens.

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RUPTURE OF THE UTERUS.

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In 1927 I published in THE LANCET[1] records of three cases of rupture of the uterus through the site of the scar of a previous Cæsarean section. Since then I have operated on three further cases of rupture of a previous Cæsarean scar, and one case of rupture of an intact uterus. The details are as follows:—

Rupture at Site of Cæsarean Section.

CASE 1.—Mrs. A, aged 39, had had three normal confinements, then one Cæsarean section for central placenta prævia ten years ago, followed by a normal confinement induced prematurely by means of bougies six years ago. She was admitted to hospital on the suspicion of labour by the onset of painful contractions of the uterus and commencing dilatation of the cervix. The pains stopped however, and she was comfortable until 26 hours after admission, when she complained of sudden abdominal pain and showed signs of distress, the pulse-rate rising to 1[illegible]

There was no abdominal rigidity, no sign of free fluid, and the fœtal heart was absent, though it had been heard a short time previously. A diagnosis of uterine rupture was made, and the abdomen was opened. Much blood, both fluid and clotted, was found free in the peritoneal cavity. At first the rupture was not apparent, but was soon discovered as a small hole, situated in the middle of a bluish area the size of half-a-crown at the upper end of the old Cæsarean scar. The uterus was incised along the old scar and the dead fœtus was extracted, together with the placenta which was found adherent to the anterior wall. The area round the perforation was excised and the uterine wound was sutured. Convalescence was somewhat stormy, but the patient recovered and was discharged in 23 days with a normal involution of the uterus.

CASE 2.—Mrs. B, aged 33, a 3-gravida, had a flat pelvis (diag. conj. 9·0 cm.), and had been delivered twice by Cæsarean section. The first Cæsarean section had been done for obvious disproportion. The second was done by my house surgeon, under my supervision, after a trial of labour, because the child was small and believed to be premature, though fœtal movements had not been felt for a week. The child, when delivered, was dead, having a soft hydrocephalic head and a spina bifida.

The patient was admitted to hospital complaining of labour pains, but uncertain of the period of gestation. She was allowed to continue in labour on account of the small size and prematurity of the fœtus, and because she had a cough. After labour had continued intermittently for 3[illegible] hours there was no progress, and the abdomen was opened with a local anæsthetic, and, towards the end of the operation, light chloroform anæsthesia. There were many adhesions between the omentum and the uterus, and a dense adhesion between the uterus and the anterior abdominal wall. On exposing the uterus the lower end of one of the previous scars was found to have split for a distance of 5 cm. without any appreciable hæmorrhage, and without rupture of the fœtal membranes, which, indeed, were bulging through the hole. The aperture was enlarged, the fœtus (weight 5·8 oz.) was extracted alive, and the placenta was found on the posterior wall of the uterus. The wall of the uterus was sewn up in the usual manner, with some difficulty owing to the partial anæsthetisation of the patient. Convalescence was good, the condition of the chest giving rise to very little trouble.

CASE 3.—Mrs. C, aged 38, had the following history: First child, premature, stillborn; second and fourth, Cæsarean section; third and fifth, premature, alive. She was admitted to hospital eight hours after the onset of labour, and two hours after the commencement of severe abdominal pain. Her colour was good, the pulse-rate was 120, and the fœtus was apparently in the uterus with the vertex presenting, but the fœtal heart sounds were not heard. The pulse-rate continued to rise, and four hours after admission it was noted that the fœtus was palpable in the left side of the abdomen, and the retracted fundus of the uterus to the right side.

The abdomen was opened with the use of spinal anæsesia (1 c.cm. stovaine), and the fœtus and placenta were und lying free in the peritoneal cavity, the amniotic sac maining intact. The uterus had split throughout the hole length of one scar, the other being easily detected to e right side and was firmly retracted. The placental e had been on the anterior wall. Subtotal hysterectomy was pidly performed, leaving the ovaries in situ. Most of the od in the abdomen was clotted, and so was unsuitable r transfusion, so gum saline, 200 c.cm., was administered travenously. The patient died one hour afterwards.

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[1] THE LANCET, 1927, ii., 598.

Cases 1 and 3 are of interest in that in both cases the ars had stood the strain of labour previously at, or ar, full-term, and that when rupture occurred it was ticed that the placenta was situated on the anterior all, which fact was noted in my first paper. In se 2 rupture cannot be explained by this fact, but obably by imperfect technique, but, if the placenta d been situated anteriorly, rupture would almost rtainly have been complete with loss of the child, d possibly of the mother.

On consideration of these facts it follows that, in ses of previous Cæsarean section, careful antenatal amination should be directed towards determining, possible, the placental site.

DIAGNOSIS OF THE PLACENTAL SITE.

Palpation ; round ligaments.—The round ligaments pregnancy at, or near, full-term, can easily be lpated at the sides of the uterus, the left being always ore easily felt than the right owing to the torsion d inclination to the right of the pregnant uterus. he presence of the placenta on the anterior wall of the erus causing increased enlargement of the front part the uterus causes these ligaments to be felt rather rther back than normal, or not at all.

Fœtal triangle.—The outlines of the edge of the fœtal trunk and upper and lower limbs are obscured somewhat by the placenta situated in front.

Auscultation.—The fœtal heart sounds, being further from the surface, tend to be more distant than normal, and the tones may be partially or completely masked by the loud placental souffle to be heard all over the front of the uterus.

Prevention of this dangerous and unforseeable complication of labour lies in the performance of the lower uterine segment modification, rather than the classical Cæsarean section.

Spontaneous Rupture.

Mrs. D, aged 37, a 4-gravida, had two premature and one full-term child, the last being a premature delivery three and a half years previously. On antenatal examination it was noticed that there were two small fibroids palpable in the anterior uterine wall, but none in the lower uterine segment.

After the onset of labour full dilatation of cervix was attained in about one hour, but after that the contractions of the uterus became weak and infrequent. Quinine hydrochloride, grs. 10, was given twice, four and six hours after full dilatation, and had the effect of stimulating contractions, so that the head was driven down to the vulva low enough to be visible. To obviate the use of forceps at this stage, 2 units of pituitary extract were injected, and were followed by violent pains. The patient became blue, and her pulse-rate rose to 158. An arm of the fœtus could then be felt protruding through the wall of the uterus, low down on the left side. The abdomen was opened under stovaine spinal anæsthesia, and the dead fœtus and the uterus rapidly removed by supravaginal hysterectomy. The free blood and clots in the peritoneal cavity were collected, and filtered through sterile gauze and returned to her circulation by venous transfusion. After the operation the patient rallied a little at first, but died 14 hours afterwards.

Post-mortem sections of the kidneys showed signs of slight chronic and acute nephritis.

CLINICAL AND LABORATORY NOTES

A CASE OF
ACUTE THROMBOPENIC PURPURA HÆMORRHAGICA
CURED BY SPLENECTOMY.

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We report this case as an illustration of the excellent sult of splenectomy in a case of acute thrombopenic urpura and because we consider that it may explain some extent the heavy mortality usually ascribed splenectomy in this condition.

Miss A was a trained nurse, aged 52. Nothing important as noted in the family history. She had suffered from curring attacks of vomiting, from puberty at 13 to the enopause at 49. At first these attacks had coincided th the menstrual periods; later they had become more equent. At the menopause they had ceased for one year. uring an attack the patient was usually able to continue er work.

At the end of February, 1930, while nursing a case, the atient began to feel ill, and noticed purpuric spots on her ms and legs. On March 3rd nose-bleeding started. n March 4th the epistaxis was more severe and she felt ery tired. On the following day she finished nursing her ase and consulted her doctor, who referred her to the Royal erkshire Hospital, where she was admitted on March 7th. he blood counts from the time of admission onwards are een in Table I. During March 8th she suffered from eadache, and vomited; these symptoms she regarded as due to one of her usual bilious attacks. Bleeding started from the mouth and nose and, since it continued throughout the day, resisting all local treatment, a transfusion of 600 c.cm. of citrated blood was given in the evening. After the transfusion bleeding ceased until noon of the next day, about 15 hours later. Bleeding then recurred from the mouth and the transfusion incision began to ooze.

On March 10th the patient's condition had become very serious; ecchymosis and purpuric spots had appeared all over the body and bleeding from mouth and nose and from the transfusion incisions in the arm had become continuous. She felt comparatively well after her transfusion; vomiting, headache, and feeling of tiredness had disappeared, and she did not realise the gravity of her condition. On March 11th all the symptoms had become still more severe. A transfusion of a pint and a half of citrated blood at 7 P.M. was entirely without effect on the hæmorrhage. On March 12th bleeding was continuous all day; some of the stools showed altered blood, more purpuric spots appeared, and the patient began to feel ill. On March 13th the number of purpuric spots was increasing so rapidly all over the body that the sister who was nursing the case stated that it was almost possible to watch them appearing. The transfusion incisions were oozing continuously and to such an extent as to soak through all the dressings, including bath towels.

It was obvious that the situation was becoming desperate and that transfusion as a means of controlling the bleeding was useless.

DIAGNOSIS.

Purpura hæmorrhagica is a disease characterised by marked diminution of platelets, prolonged bleeding time, normal coagulation time, and spontaneous hæmorrhages into skin and subcutaneous tissues and from mucous membranes. The condition may be idiopathic or secondary to some other disease, such as pernicious anæmia, leukæmia, aplastic anæmia, or possibly to the presence of a septic focus somewhere in the body. It is of the utmost importance that an early decision be made as to whether the condition is primary or secondary, since treatment and prognosis depend on diagnosis.

It was obvious in the present instance that the condition was one of purpura, but it was a matter of some difficulty to decide whether primary or secondary. All the usual causes of purpura could be excluded, with the exception of an early acute leukæmia or a possible septic focus in the abdomen associated with the recurrent bilious attacks—e.g., the gall-bladder. The latter diagnosis was considered extremely unlikely and no positive signs supporting it could be found; a diagnosis of acute leukæmia, however, merited consideration. Reference to Table I. shows that on March 7th, when the patient was first examined, there were 2160 polymorphonuclear cells and 4680 lymphocytes per c.mm. of blood. The former is at the lower limit and the latter above the upper limit of normal, assuming 7000 polymorphonuclears and 3000 lymphocytes per c.mm. as the maximum normal numbers. That is, there was at this time a relative and absolute lymphocytosis but no anæmia. Four days later there was still a low polymorphonuclear count but the lymphocyte count was an average normal. Such a count might be explained by a somewhat exhausted bone-marrow producing fewer than normal granular leucocytes whilst the normal number of lymphocytes are produced in the lymphoid tissues, a state of affairs which one might expect in idiopathic purpura hæmorrhagica. It might, however, be regarded as indicating an early leukæmia.

TABLE I.

Date in 1930.	Hb. percentage	Red cells per c.mm.	White cells.		Platelets per c.mm.
			Per c.mm.	Differential.	
				Per cent. Per c.mm.	
March 7th	80	4,300,000	7,200	P. 30 = 2160 L. 65 = 4680 M. 5 = 360	26,000
8th	Transfusion, 600 c.cm. of citrated blood.				
11th	" 800 "				
13th	90	4,500,000	5,000	E. 2 = 100 P. 46 = 2300 L. 44 = 2200 M. 8 = 400	120,000
17th	72	4,000,000	13,000	P. 70 = 9100 L. 20 = 2600 M. 10 = 1300	160,000
18th	—	—	—	—	400,000
21st	—	4,300,000	9,600	E. 4 = 384 B. 2 = 192 P. 62 = 5952 L. 30 = 2880 M. 2 = 192	303,000
24th	80	4,000,000	8,800	E. 4 = 352 B. 2 = 176 P. 46 = 4048 L. 46 = 4048 M. 2 = 176	250,000
29th	—	3,700,000	8,200	P. 46 = 3772 L. 48 = 3936 M. 6 = 492	350,000
April 4th	80	4,300,000	6,800	E. 3 = 204 B. 1 = 68 P. 32 = 2176 L. 52 = 3536 M. 12 = 816	447,000
15th	90	4,150,000	6,800	E. 1 = 68 P. 40 = 2720 L. 54 = 3672 M. 5 = 340	274,000
August 6th	90	4,500,000	8,200	B. 2 = 164 P. 29 = 2378 L. 61 = 5248 M. 5 = 410	328,000

E. = Polymorphonuclear eosinophil. B. = Polymorphonuclear basophil. P. = Polymorphonuclear neutrophil. L. = Lymphocyte. M. = Monocyte.

In Table II. are given blood counts from two cases of acute leukæmia observed by us during the past few months. The first showed no anæmia, great absolute lymphocytosis, enlarged lymphatic glands, and an enlarged spleen. The second showed a marked anæmia, and a decreased white cell count, but the spleen and lymph glands were not enlarged. Both cases showed purpura at the time the counts were made. In the first case the diagnosis was confirmed at post-mortem examination and the subsequent clinical course of the second made leukæmia the only possible diagnosis, though we were unable to obtain a post-mortem.

TABLE II.

Case.	Red cells per c.mm.	White cells.		Platelets
		Per c.mm.	Differential.	
			Per cent. Per c.mm.	
1	4,450,000	307,500	P. 3 = 9,225 L. 97 = 298,275	—
2	1,900,000	2,300	P. 12 = 276 L. 88 = 2,024	21,000

It is clear therefore that in the present case leukæmia could not be absolutely excluded on the grounds that there was neither anæmia, increased number of white cells per c.mm. of blood, nor enlarged spleen. At the outset we considered it advisable to watch the patient for some time before making a final diagnosis, meanwhile controlling the bleeding by transfusion. When transfusion failed, it was obvious that a decision had to be made without further delay. If the case were one of idiopathic purpura hæmorrhagica, immediate splenectomy before the patient's condition deteriorated further offered the best chance of recovery. It was therefore decided to remove the spleen and risk the possibility of the case being one of leukæmia. If this was the correct diagnosis the prognosis was in any case hopeless and could hardly be made worse by operation.

Treatment.

On March 13th Mr. J. L. Joyce was called into consultation with a view to splenectomy. He considered that the patient's condition was then quite good, and removed the spleen the same day.

At the operation all incisions were made by diathermy; the spleen was found bound down by fairly firm fibrous adhesions but otherwise appeared normal to naked-eye examination. A transfusion of citrated blood was given during the operation and very little bleeding was experienced. After the operation all bleeding stopped and did not recur. By March 18th all purpuric spots had disappeared and recovery was uneventful. Blood counts subsequent to operation are shown in Table I., and it is of interest to note that the lymphocytosis still persists, almost five months after operation, when the patient is back at work and feeling quite well.

The spleen measures 12 by 4 by 7 cm. and weighs approximately 100 g. It appears normal in size and shape, and on histological examination shows nothing more than engorgement of the sinuses with blood.

Spence,[1] in 1928, analysed 101 cases of this disease in which splenectomy had been performed; of 1 acute cases 10 died. In our opinion this high mortality is due to two factors. First, there is the difficulty of early diagnosis, and consequent delay in operating. By the time the diagnosis is made the patient is either too ill to stand the operation or his bone-marrow is so exhausted that, if the operation is successful, manufacture of platelets is at such a low level that the purpura continues. Secondly, there is the possibility of error in diagnosis leading to splenectomy in some such disease as leukæmia in which the purpura is secondary. A number of the fatal results reported in the literature undoubtedly all into one or other of these two groups, and the onsequent very heavy mortality has deterred surgeons from performing splenectomy until every other method of treatment has been tried. We are inclined o the view that this attitude to splenectomy is wrong, and that early operation will reduce the mortality considerably. In 1929 several writers[2] [3] these points and reported similar successful cases.

References.—1. Spence, A. W.: Brit. Jour. Surg., 1928, xv., 66. 2. Killiers, W. A.: Jour. Amer. Med. Assoc., 1929, xcii., 032. 3. Litchfield, H. R.: Arch. Pediat., 1929, xlvi., 511.

ACUTE PANCREATITIS FOLLOWING LYSOL POISONING.

By Victor Dellal, M.R.C.S. Eng.,
HOUSE SURGEON, LOWESTOFT AND NORTH SUFFOLK HOSPITAL.

A MARRIED woman, aged 31, was admitted to he Lowestoft and North Suffolk Hospital after having drunk some lysol. Her stomach was washed out before admission to hospital. That only a little of the poison was taken was shown by the fact that there was merely a small patch of corrosion at the back of the throat; the mouth and lips showed no sign of burning. Her temperature was 98·8° F., the pulse-rate 88, and the respirations 20. She looked pale, was quite conscious, and complained of no abdominal pain or burning in the mouth. There was neither rigidity nor tenderness of the abdomen, which moved quite normally on respiration. Under ordinary treatment she made very good progress until the afternoon of the fourth day, when abdominal pain was complained of for the first time, and examination showed the presence of tenderness and rigidity over the upper part of the abdomen. Her temperature was 99°, the pulse-rate 96, the respirations 28. The urine contained a cloud of albumin, but showed no indication of lysol poisoning. Her condition became gradually worse, though she was never unconscious. On the fifth day she rapidly went downhill and died early in the afternoon.

As the patient had done so well during the first three days we were uncertain about the cause of death, and arrangements were therefore made with the coroner for a necropsy. Very little was found in the stomach and upper part of the small intestine to suggest lysol poisoning. The pancreas showed typical appearances of acute hæmorrhagic degeneration and extensive fat necrosis was present throughout the abdominal cavity; the mesentery of the small intestine, in fact, was almost a solid mass of fat necrosis. The kidneys were slightly congested; the liver appeared normal. In the right pleural cavity there were recent adhesions, and about 15 oz. of pale fluid were found. There was adequate proof that the woman had drunk lysol, but evidently little had been taken.

Not having heard that lysol poisoning may produce acute pancreatitis, or indeed that the latter can be caused by any poison at all, I explained the situation to the coroner and mentioned that the lysol had played very little part, if any, in causing death. He thus returned a verdict of death from acute pancreatitis; no mention was made of the taking of lysol. It would be interesting to know if any cases are on record of acute hæmorrhagic pancreatitis ensuing on lysol poisoning.

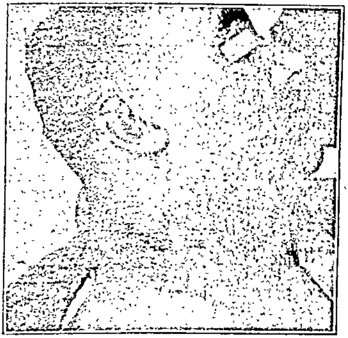
I am indebted to Dr. F. P. Halkyard for permission to report this case.

A FATAL CASE OF ANTHRAX.

By Adam L. K. Rankin, M.D., D.P.H. Edin.,
SENIOR MEDICAL ASSISTANT, EDINBURGH CITY FEVER HOSPITAL

THE following case illustrates the profound toxæmia and the rapid fatality of an anterior cervical infection by anthrax. The patient was a ragman, aged 53. His occupation consisted in superintending the unloading of bales of rags from ships and their subsequent transport to a large paper factory. He himself often carried on his right shoulder some of the smaller bales weighing about one to two hundredweight. These bales were imported from the continent, mainly Belgium and Germany, and I understand that they very often lay in the ships' holds in contact with hides.

The patient first complained of feeling unwell on Nov. 28th, 1930. He said he felt shivery and he had a swelling on the right side of his face and neck which was uncomfortable. On the 30th he consulted a practitioner who sent him to the City Hospital on the following day as an observation case of erysipelas.



Photograph showing lesion in the neck.

On admission he was obviously very ill and toxic. He was cyanosed and dyspnœic; temperature 100° F., pulse rapid and weak. There was no complaint of pain in the neck. On examination there was a large amount of swelling and œdema of the right side of the neck extending from behind and below the right ear down to the level of the clavicle and manubrium sterni. The swelling involved the whole of the anterior triangle of the neck. There was also considerable brawny swelling of the tissues in the mid-line of the neck causing pressure on the trachea and consequent cyanosis and dyspnœa. There was a small superficial depressed black eschar situated about three inches below the right ear. Numerous vesicles tending to become confluent surrounded the eschar. The tissues around the eschar were red, extremely œdematous, and slightly tender on palpation. There were no constitutional symptoms apart from profuse perspiration. Films made from the vesicles showed typical anthrax bacilli in large numbers. A blood culture taken on admission also showed the presence of numerous *B. anthracis*.

Treatment.—Hot eusol fomentations were applied locally and 60 c.cm. of Sclavo's serum administered (30 c.cm. intravenously and 30 c.cm. intramuscularly). On the following morning the patient was much weaker; 100 c.cm. of Sclavo's serum was given intravenously but the patient died that evening, 24 hours after admission, and apparently on the fifth day of the disease.

I wish to thank Dr. W. T. Benson, medical superintendent, for permission to publish this case.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF NEUROLOGY AND PSYCHIATRY.

AT a joint meeting of these Sections held on Feb. 12th the President of the Section of Psychiatry, Dr. S. A. KINNIER WILSON, took the chair, and Dr. GORDON HOLMES opened a discussion on

Mental Symptoms Associated with Brain Tumours.

Divergence of opinion, he remarked, arose from the fact that the psychiatrist rarely found evidence of intracranial neoplasm in his patients but the neurologist knew that a relatively large proportion of patients with increased intracranial pressure presented some abnormalities of mind. The direct cause of these mental symptoms varied; some authorities had incriminated the diffuse inflammatory reaction in the meninges sometimes found in cerebral tumours, comparing it to the meningeal changes in general paralysis of the insane and cerebral syphilis, but this reaction was too inconstant and mild to provide a general explanation. The theory that the symptoms were due to intoxication by break-down products was refuted by the fact that they were associated with every kind of cerebral tumour.

The most common cause of mental symptoms was undoubtedly raised pressure, which, besides causing local symptoms, interfered with circulation and the drainage of the cerebro-spinal fluid. In some cases, however, the important factors were the site of the tumour and the structures injured by it. The drowsiness and somnolence associated with lesions of the infundibular region and the changes in character and temperament found in association with pituitary growths were well recognised. Disturbances of the speech mechanism were very commonly associated with mental disturbance, for the patient failed to understand why his words brought no adequate response and why his attendants spoke to him in meaningless sounds, and became irritable and excited or depressed. Both aphasia and apraxia were probably always associated with some degree of intellectual impairment, as were also probably the various types of disorientation found in parietal lesions. Paralyses due to involvement of motor centres and tracts, disturbances of vision, headache, vomiting, and epileptic attacks all frequently evoked psychological reactions of a depressive or an anxious type.

MENTAL DISTURBANCES ASSOCIATED WITH TUMOURS OF THE FRONTAL LOBE.

Lesions of the frontal lobe produced mental symptoms perhaps more frequently than those of any other part of the brain except the corpus callosum. Experiments on removal of the frontal lobe from animals had shown an increase of impulsiveness and aggressiveness, suggesting absence of higher inhibition, and a diminished adaptation to the surroundings, and Monakow had suggested that the frontal lobe played an important part in the association and elaboration of intellectual data. More permanent symptoms were probably due to compression or destruction of frontal lobe tissue; they often preceded the local symptoms and might be the first observed. It was impossible to give a clear-cut picture of them, as they occurred in numerous combinations. Perhaps the most common syndrome was characterised by apathy, retardation, lack of initiative, and failure of attention; it often suggested neurasthenia. Memory, especially for recent events, might be affected, probably because of the failure of attention. A second type of disturbance was chiefly marked by depression, associated with general mental enfeeblement, drowsiness, and periods of stupor. The patient reacted mechanically and was often incontinent; confusion on awaking from sleep or after fatigue might be a prominent symptom. A third type, not so frequent, was distinguished by restlessness, exuberance, euphoria, egotism, and a general childishness, together with a tendency to facetiousness that had been described as *Witzelsucht* or *jeu de mots*. These symptoms might alternate with periods of depression.

In some cases the mental symptoms might bear a superficial resemblance to those of general paralysis but were due to confusion rather than dementia. When, however, the symptoms of mental deterioration were associated with tremulousness, poverty of expression, dysarthria, a mild degree of aphasia, and perhaps convulsive phenomena, the resemblance might be striking. Dr. Holmes concluded that a more extensive analysis of the mental symptoms of frontal lobe tumours promised to throw light upon the action of the brain as the organ of the mind.

Dr. F. L. GOLLA quoted statistics from Claybury Mental Hospital and the Maudsley Hospital. In the first institution 37 cases of cerebral tumour had been found post mortem in 11 years, and insanity could be ascribed to the growth in 22 cases. In all of the 34 cases studied during the past eight years in the Central Pathological Laboratory the mental symptoms were directly referable to the tumour. There was an overwhelming preponderance of temporal tumours, especially right-sided. The symptomatology could be summed up as dull, confused, and amnesic, with aphasia when the left temporal region was involved. He considered that facetiousness was merely a conscious defensive reaction. The low number of subtentorial tumours made it unlikely that mental symptoms could be explained by increased intracranial pressure alone. Systematised disorders of conduct occurred in any general poisoning of the nervous system; given a general enfeeblement of the powers of cerebral coördination, it was reasonable to expect that the response of the brain as a whole would be determined largely by the previous history. It was unnecessary to assume specific lesions of certain functional systems. The nervous system was almost infinitely labile, and the same final reaction might be reached in many different ways. Psychiatrists had always wistfully hoped that the inconceivable complexity of mental life might be resolved into a number of static mechanisms; nevertheless, the mind and its nervous substrata functioned as a whole, and psychiatry was unlikely to derive much help from the study of isolated lesions.

Dr. RUSSELL BRAIN pointed out that one of the greatest difficulties in the localisation of intracranial tumours was to separate the local symptoms of the growth itself from the secondary symptoms produced by increased intracranial pressure. He described some illustrative cases of tumour of the cerebellum associated with mental symptoms. He concluded at profound mental disturbances, including visual nd olfactory hallucinations and dysphasia, might produced by tumours in the posterior fossa, which ere commoner in elderly persons than in children. ascular disturbances, especially œdema, might lay an important part, but tension of the brain ssue might also be responsible. Mental symptoms roduced by local pressure were indistinguishable rom those produced by remote effects of a growth. n accurate history was very important, and in cases f cerebellar tumour giddiness, instability, and a endency to fall preceded the mental disturbance y a significant interval. Greatly increased intra-anial pressure indicated by severe papillœdema, hich was rare with frontal lobe tumours, might suggest subtentorial growth. Ventricular estimation and entriculography might be of great assistance in oubtful cases.

CEREBRAL TUMOURS IN MENTAL HOSPITALS.

Dr. **John Brander**, quoting from the results of 500 consecutive autopsies in a mental hospital, emonstrated that the incidence of cerebral tumour—bout 0·5 per cent. of the total admissions—was not common cause of the grosser mental disorders. ixteen of the tumours had occurred in women and 8 in men; among the women only 6 had been rimary, but among the men 24. The primary umours had appeared to produce much more mental isturbance than the secondary. The same proportion f cerebral tumours had occurred among the nursing taff as among the mental patients. Tumours often erely rendered manifest a latent tendency to a sychosis, which might be of any one of a number of ifferent types irrespective of the site of the tumour. ive nævoid tumours had been found, all in epileptics anifesting the typical temperament and behaviour rrespective of the site of the growth. Some of the pileptic symptoms had localising value, but none f the mental symptoms. He suggested that an ttempt be made to distinguish between cases in hich there was obstruction of the aqueduct or within he ventricles, and tumours in the foramen magnum or f the brain stem, which seemed to produce intracranial ressure.

Dr. **N. G. Harris** said that out of 365 autopsies on ental patients he had found four cerebral tumours in omen and one in a man. The man had been an mbecile epileptic and his fits—except the status pilepticus in which he had died—had seemed unconnected with the growth. In the women the mental ymptoms of dullness, depression, and apathy had nly appeared towards the end of a long stay in ospital.

Dr. **Edward Mapother** mentioned that a certain umber of cases that had been at the Maudsley Hospital had died at King's College Hospital and so ad not come under Dr. Golla's notice. If they had, erhaps the proportion of cases with aphasia in his tatistics would have been higher, because aphasia as the one localising sign common in cerebral tumours dmitted to hospital for mental reasons. A large umber of the patients who had died in the Maudsley Hospital, though suspected of cerebral tumour and xamined by an expert, had not shown papillœdema ntil just before death. The absence of physical igns, localising signs, and papillœdema perhaps xplained why cerebral tumour cases coming under otice for mental symptoms seemed uniformly nfavourable. He was entirely sceptical about the ocalising value of mental symptoms. The *Witzelsucht* hown by a recent patient had seemed to be merely an accentuation of his normal temperament. A striking feature of the mental symptoms of cerebral tumours was their extreme chronicity.

Dr. **C. P. Symonds** said that material for generalisation should be sought only in those patients in whom mental symptoms had preceded the symptoms of increased intracranial pressure, preferably by some months. It was the tumour growing in a relatively silent area of the brain—either the prefrontal lobe, the temporal lobe, or the corpus callosum—which was likely in its early stages to produce mental symptoms without those of increased intracranial pressure. The early development of mental symptoms in a case of cerebral tumour seemed to depend rather upon the amount of white matter destroyed than upon the precise localisation. In a tumour of the left side or of the corpus callosum the observer was guided in localisation by aphasia and apraxia. It was a person who had what was clearly a mental disorder of the organic reaction type, without symptoms of increased intracranial pressure or evidence of cerebral syphilis or at an age when cerebral arterio-sclerosis was not to be expected, who might be suspected by a process of exclusion to be suffering from a tumour of one or other frontal lobe or of the right temporal lobe.

Dr. **C. C. Worster-Drought** maintained that cerebral tumour was very rarely a cause of mental disorder—apart from minor psychical disturbances—and had little to do with the type of the disorder, which was determined by the biological and psychological constitution. A lesion of the left frontal lobe was much more likely to produce symptoms tending towards dementia and disorders of conduct than one of the right frontal lobe, which, on the other hand, was more likely to be associated with amnesia and similar disorders. In mid-brain tumours the tendency was rather to euphoria and emotional disturbances.

Dr. **Isaac Frost** said that he had recently obtained some evidence of considerable daily fluctuations in the hæmoglobin content of the blood of idiopathic epileptics, changes which could not be explained on the hypothesis of an anæmia, and he was searching tentatively for a reservoir into which corpuscles could disappear. He asked whether Dr. Brander thought that nævoid tumours, from their size and structure, might conceivably act as reservoirs for blood corpuscles.

The **President** pointed out that a psychiatrist used the word "mental" in the meaning of a systematised psychosis, but that the neurologist included minor mental disturbances in his use of the term, hoping to derive some data from them. He had little hope that the quest would be successful. He thought that there was a great deal of difference between the two halves of the brain. He always inquired whether or not the tumour was related to either of the two great associational systems of the cerebrum: the corpus callosum or the inferior longitudinal fasciculus. If the corpus callosum were involved, so-called mental symptoms were more likely to occur. The fibres in the corpus callosum came from the whole of the hemispheres and were collected there. The most difficult tumour to localise was a right temporal tumour in a right-handed person. Cerebral tumours rarely ended in asylums, because they were not large enough to produce symptoms necessitating segregation. Patients with disseminated sclerosis practically never died in asylums, because there was no cortical involvement but mainly a ventricular one. Tumours in the region of the ventricular system tended to give rise to emotional symptoms, and tumours related to the cortical system tended to give rise to symptoms of a more intellectual character, especially if one of the two large associational systems was involved.

SECTION OF LARYNGOLOGY.

A MEETING of this Section on Feb. 6th, with Mr. FRANK ROSE, the President, in the chair, was devoted to

Frontal Sinusitis and its Treatment.

Mr. J. P. STEWART (Edinburgh) opened with a paper by himself and Mr. J. S. FRASER which covered all the cases of frontal sinus affections seen in the ear and throat department of the Edinburgh Royal Infirmary and treated by conservative methods and by intranasal operation (1921–30); also all the cases seen in their private practice from 1906 to 1930; and all the cases operated on by the external route, both hospital and private. The cases were divided into acute and chronic, the latter being all of more than six months' duration. In 338 the sinus was affected either alone or in association with other paranasal sinuses; 241 of these were acute and 31 of them were bilateral.

Acute sinusitis.—Males numbered 160, females 81 in the acute series. The ages ranged from 11 years to 70. In 61 of these acute cases the trouble had lasted no more than a week when the patient was seen, in 42 two weeks, and in 19 three weeks, while in two the period was seven weeks, and in 22 three months or more up to six months. Either coryza or influenza was held responsible for at least 142, injury for 14 cases. In 230 of the acute cases there was a complaint of frontal headache, and in at least 183 the pain was periodic, usually in the morning and until 2 or 3 P.M. When the pus was under great tension, a continual throbbing pain was present. Since patients who were night nurses had the pain soon after taking on their night duties, it probably depended on assumption of the erect posture. In 125 cases there was tenderness on pressure on the anterior wall of the sinus, or its floor, while an orbital complication was noted in 23. There was pus in the anterior part of the middle meatus in 128, pus and polypus in 38. In 57 pus was absent. In 50 of the unilateral cases the septum was deviated to the affected side, to the non-affected side in 16. The organism most often found in the pus was the streptococcus; others included pneumococci, staphylococci, influenza bacilli, diphtheroids, and *Bacillus coli*. By radiography, the frontal sinuses only were cloudy in 42 cases, the frontals, ethmoids, and antra in 60. In seven of the cases all the sinuses were obscured.

Of the 241 acute cases, 161 were treated by conservative methods only: menthol inhalations, head light baths, and analgesic powders. In acute cases in which the frontal, ethmoid, and antrum were affected, intranasal operation on the antrum alone, with treatment by inhalations, and possibly head light baths, often brought about a cure without the need for operation. Results were ascertained in only 70 cases, and these showed that 46 had been cured by conservative methods, 16 were relieved—i.e., there was pain only during acute coryza—while in six there was still pain and discharge. Intranasal operation was done in 66 cases, and for these local anæsthesia alone was used in 52, the remaining 14 having both local and general. Only exceptionally was an attempt made to wash out the sinus with a cannula, dependence being placed on the free drainage brought about by opening up the posterior ethmoidal cells. In addition, submucous resection of the septum was done in 12 cases, and in 24 others the maxillary sinus was drained. One patient developed erysipelas, another had scarlet fever. Cure resulted in 32 cases, in three there was a slight recurrence of frontal pain in the presence of coryza, in eight the discharge still persisted but without pain, while in 23 the result was unknown. External operation was done in 14 cases.

Chronic sinusitis.—In the 97 chronic cases the condition had existed six months or longer; 64 complained of frontal headache; but in only 22 was this periodical. In 36 there was tenderness over the frontal sinus, and an orbital complication—swelling of the upper eyelid—in 23. The frontal sinuses only were cloudy in 10, frontals, antra, and ethmoids in 36, and all the sinuses were cloudy in 16. The ethmoids and maxillary antra were affected in 55 cases, and pansinusitis was present in 13. In 18 cases the patients would consent only to conservative treatment; six of them were relieved, seven remained as before; in five there was no report. In 39 cases in this category the frontal sinus was drained by the intranasal route; submucous resection of the septum was done in three cases, drainage of the maxillary antrum in 17 in addition to the frontal sinus operation. As to results, there was a cure in 16, in six the discharge continued but there was no pain. In six there was both pain and discharge; no report in 10 cases. The external operation was done in 40 cases, 31 of whom had been already operated upon. Pus and granulations were found in 27 cases, pus and polypoid tissue in 10 cases, mucocele in three. As to complications, there was severe fever in one, slight in three, pneumonia (recovered) one, serous meningitis (recovery) two, corneal ulcer (vision recovered) one, meningitis (fatal) three cases.

INTUBATION.

Mr. DOUGLAS HARMER described his treatment by intubation and analysed 63 cases of sinus trouble so dealt with. Under general anæsthesia an incision ¾ in. long was made immediately below the inner end of the eyebrow, and the sinus was opened through the anterior wall. A thin probe was then passed downwards into the nose, and a soft rubber catheter was drawn up and anchored in the wound. After about ten days the tube was replaced, usually by one of larger size, and this replacement should be repeated at regular intervals. The operation could usually be completed in 15 minutes; so small was the shock that in a day or two the patient was able to leave his bed. For about a week the sinus was daily irrigated through a tube with normal saline or peroxide of hydrogen. In cases of chronic sinusitis it was necessary for the patient to wear the tube for several months, but this caused no discomfort, nor did it interfere with the restarting of work in a few days. The frontonasal duct could be permanently dilated and bone absorption took place around the tube. With careful after-treatment most of the cases could be relieved and many of them cured, without disfigurement or at least with less than was left by radical operation. The operation he declared quite free from danger, and it had often been done in cases where more radical methods would have been inadvisable. Its object was to provide free drainage and ventilation, both externally and internally, and to dilate the bony frontonasal canal without damaging its lining membrane. If tubes of slowly increasing size were employed there was no irritation or inflammation, and the lining of the sinus usually recovered quickly. In successful cases a straight passage from the nose to the sinus was obtained, and through this a cannula could easily be passed. The cases in which this treatment was likely to fail were those where long-standing inflammation had caused a scarring of the soft tissues; it was especially likely to fail in those operated on several times previously, for in many of these the ducts existed no longer, being replaced by scar tissue. Of 15 cases of acute sinusitis the pain had been permanently relieved in 12, and the discharge was relieved in 10. One patient died of cerebral abscess. In 35 cases of chronic sinusitis, pain was relieved in 16, the discharge in 19. One patient died from erysipelas two years later, another destroyed himself. In a large percentage of the cases the wounds healed up so well that the scars were almost invisible. No fatal result could be attributed to this operation.

Mr. **WALTER HOWARTH** read a paper on the

TREATMENT OF CHRONIC FRONTAL SINUSITIS.

Most cases of acute sinus inflammation, he said, whether catarrhal or purulent, tended to heal spontaneously. The main factor in such a result was the possibility of inflammatory products escaping freely from the affected sinus. In the frontal sinus were many factors which might interfere with this, and any of these might cause the case to become chronic. High deviations of the septum and displacements of the middle turbinate—and overgrowths of it—might obstruct the frontonasal duct. The development in this region of inflammatory processes, such as polypi and local hypertrophic conditions, often seen in those having a dusty occupation, favoured the condition becoming chronic. It was his belief that infections due to the influenza bacillus were more likely to lead to chronic sinusitis than those due to other organisms. Ventilation and proper aeration of the region was very necessary. It was always his aim to adopt the simplest measures which might be necessary in each case, interfering as little as possible with the natural process of repair. This simplicity was more possible in recent cases than in those which had lasted some time. He believed that the frontal sinus and the anterior ethmoid cells were, nearly always, simultaneously involved, consequently the operation planned must be such as would drain both adequately. He removed as much of the anterior part of the labyrinth as might be seen to be necessary. He relied on subsequent sounding to cure the overlying sinusitis. Though many cases could be cured by intranasal methods, there were a residue in which headache, tenderness, discharge, and eye symptoms persisted. These he had dealt with for ten years by the operation which was associated with his name, and which he regarded as a conservative operation, since it merely sought to provide efficient drainage for the sinus into the nose, at the same time permitting removal of the ethmoidal disease. No set operation was applicable to all conditions, and he did not suggest that his operation could cure every case, but the method of approach was a good one, and the operation could be modified to meet varying conditions. As to maintaining the patency of the new frontonasal duct, in most cases no difficulty arose; retention of the rubber drainage-tube for ten days, and the subsequent application of the bougie, with occasional touching of the granulations with nitrate of silver, was all that was needed. But in some cases the upper part of the nose was very narrow, and the opening was too slit-like. In some cases he had covered the raw bony surface with skin-grafts. Unless the ethmoidal disease was removed, reinfection of the cavity might take place, and so the ultimate cure be delayed.

A discussion followed.

MEDICAL WOMEN'S FEDERATION.

AT a meeting of the London Association of the Medical Women's Federation on Jan. 27th the chair was taken by the President, Dr. **LETITIA FAIRFIELD**, and a paper on

The Uses and Limitations of Operations on the Ear

was read by Miss **MILDRED WARDE**. She said that malformations of the outer ear varied greatly in severity, but were generally associated with normal hearing. Operation depended on the amount of deformity, and should be deferred until adolescence. If the meatus was occluded operation was usually unsuccessful, as it replaced soft tissue by hard scar and rendered hearing worse. In furunculosis it was always difficult to decide when to operate. General anæsthesia was required unless the abscess was pointing, in which case it was best opened by a sharp bistoury without anæsthesia. Exostoses might be simple or multiple, and were not important unless large enough to occlude the meatus. When associated with suppurative otitis media they obstructed discharge and must be removed, but the operation was unpleasant. Bands and adhesions might be found in patients deaf from old middle-ear disease, and there was a temptation to divide these or to perforate the drum, but it was impossible to keep the opening patent and the patient was worse than before. In acute otitis media paracentesis was indicated as soon as the drum showed bulging; the incision should be vertical, behind the handle of the malleus, and reaching to the floor of the meatus. There was considerable risk that only a small part of the diamond-shaped knife would actually perforate the tympanum. If the pain recurred and drainage was unsatisfactory, the operation should be repeated.

It was often difficult to know when to recommend operation for acute mastoid inflammation. Signs and symptoms might be equivocal when the mastoid cells were full of pus. If no focus of infection could be found in the nasopharynx the operation should be advised for all cases of persistent nasal discharge which did not respond to treatment in about a fortnight. This rule, however, was constantly broken for individual cases. The operation was to save hearing rather than life; hearing in these cases deteriorated at the age of about 45.

Chronic discharging ears could be divided into various groups. Those with large perforations and occasional reinfection from the nasopharynx responded to cleansing methods. Various ways of closing the Eustachian tube had been tried but were not without risk. A marginal perforation with granulations should have a radical mastoid operation if there was dead bone but otherwise responded to cleansing and caustics. The rationale of the radical operation was to remove dead tissue and lay the whole cavity open to drainage; the hearing was often worse after it. If the suppuration was confined to the attic, conservative operation might prove satisfactory. Acute labyrinthitis required sedative treatment in bed, but a dead labyrinth was a source of danger to the meninges, and any operation on an ear with a dead labyrinth should include drainage of this cavity. A mastoid operation should never be performed without testing labyrinthine function. True labyrinthine vertigo was very alarming and might be dangerous; it might be relieved by a mastoid operation.

In reply to questions, Miss Warde added that chronic aural discharge in children was often very hard to deal with and continued in spite of all treatment. Such children usually had poor general resistance and lived in bad surroundings. Ionisation was a good method in careful hands but required endless time and patience and great skill. To avert recurrence it was essential to get the whole ear and every little hole and corner full of the lotion. The object was to coagulate the whole surface layer and produce an absolutely sterile cavity. If there were beds enough to take all acute otitis cases these chronic discharging ears would not be seen. If ionisation did not stop the discharge it cleared up the surface infection, which was often keeping up the discharge. If ionisation failed, a radical mastoid operation was indicated unless the discharge was coming from the Eustachian tube.

Dr. **Hazel Chodak Gregory** said that ear infection with pus in the mastoid might cause diarrhœa, vomiting, fever, or inanition in infants, but could not be detected by present methods of examination.—Miss **Warde** thought it was improbable that the drum was normal in these cases. Two diagnostic points were pulsation and offensiveness of the ear discharge; a discharge that remained offensive after cleansing should always cause suspicion of the mastoid, and pulsation in the discharge meant active infection. If no adequate explanation of a baby's severe illness could be found and there was an aural discharge, it was perhaps justifiable to operate on the mastoid.

Lady **Barrett** urged the importance of consultation between the children's physician and the aural surgeon in cases of infants.

ASSOCIATION OF CLINICAL PATHOLOGISTS.

The annual general meeting of this Association was held at the Hospital for Sick Children, Great Ormond-street, London, on Jan. 31st, with Dr. **David Nabarro** in the chair. A discussion on

Vaccine Therapy

was opened by Dr. C. E. **Jenkins**. It was sometimes contended, he said, that vaccine therapy must be useless if used in the face of an infection because it was futile to expect the body to respond to further doses of the infecting organisms. This contention he regarded as fallacious. The aim of vaccine therapy should be to induce an immunogenic response on the part of tissues other than those actually invaded by the infecting organisms. The response of the tissues to living and dead organisms was different. Living organisms were able to some extent to inhibit the product of immune bodies by the tissues, but dead organisms had no such inhibitory effect. The aim of vaccine therapy should be to convert a patient susceptible to the attacks of a particular organism into a refractory subject.

Dr. **Dennis Embleton**, speaking on the investigation of cases with a view to vaccine therapy, expressed the opinion that no proof existed of the therapeutic value of vaccines. Several members disagreed with this statement, and Dr. **Jenkins** said that, although statistical proof might be lacking and might even be impossible to obtain, there was overwhelming evidence in favour of their value.—Dr. S. C. **Dyke** pointed out that many of the most successful results of vaccine therapy—e.g., in boils and the common cold—were obtained not by curing the existing lesion but by preventing future ones; in this respect such treatment might be regarded as prophylactic rather than therapeutic.

Dr. **Arnold Renshaw** outlined an elaborate scheme for the investigation of rheumatic cases with a view to their treatment by vaccines. The earlier the case was seen, he said, the greater was the measure of success to be looked for; he laid great stress upon the discovery and eradication of focal sepsis. Various members thought it was unreasonable to subject patients to the extensive routine investigation demanded by Dr. Renshaw.—Dr. **Sinclair Miller** and others drew attention to the disturbance of carbohydrate tolerance and hepatic function as revealed by the lævulose-tolerance test in rheumatic cases.—Dr. **Renshaw** said that disturbance of carbohydrate tolerance was common and that such cases, contrary to the common opinion, usually did better with limitation of the carbohydrates and plenty of meat in the diet.

Dr. A. F. **Wright** briefly reviewed the general considerations governing the preparation of vaccines. He held that the antigen used should be altered as little as possible by subculture; he recommended killing by heat and standardisation by opacity. Several members expressed the opinion that killing of the organisms was better carried out by chemicals than by heat.

Dr. **Cronin Lowe** described his technique for selection of organisms for preparation of vaccines by means of blood selection. Swabs from the patient are sown into the patient's own blood, the organism which grows in the blood being that selected for preparation of the vaccine.

Dr. A. G. **Shera** laid stress on the importance of the inclusion of the toxic products of the organisms as well as the organisms themselves in vaccines. He regarded this as being of especial importance in the case of the staphylococci and streptococci. It was his custom, he said, to add to his emulsions of organisms filtrate from broth cultures to the extent of 5 per cent.

Dr. **Jenkins** described his technique for the preparation of "residual" vaccines.

MANCHESTER MEDICAL SOCIETY.

At a recent meeting of this Society Mr. J. **Howson Ray**, the President, took the chair, and a paper on

Lower Abdominal Pain

was read by Prof. W. **Fletcher Shaw**. This common symptom in women might, he said, be produced by a large number of different conditions—medical, surgical, or gynæcological—and it was necessary to keep them all in mind when investigating a case; for failing a correct diagnosis, the patients might be subjected to a useless operation. The gynæcological conditions most commonly causing this chronic aching pain were laxity of the pelvic floor and pelvic adhesions, but a large number of other conditions might also produce it—e.g., fibroids, ovarian cysts, malignant carcinoma cervicis, chronic cervicitis, retro ovaries, endometriomata, prolapsed ovary, retroflexion of uterus, endocrine irregularity, chronic endometritis, subinvolution, varicocele, polypi, and carcinoma of body of uteri. All these had to be borne in mind in a patient with this symptom. It must also be remembered that many of these patients were mothers of young families, worn out mentally and physically by their responsibilities, and that his fatigue was often much more important than a minor pathological lesion. In such cases complete rest and holiday away from the family did more good than an operation.

Dr. **Frank Tylecote** confined his remarks to causes of lower abdominal pain which did not, at first at any rate, involve transfer to a surgeon. Among these he mentioned constipation, hæmorrhoids, abdominal fibrositis, and pain from adenitis caused by superficial irritation from a focus of sepsis in the leg. He had found it worth while, he said, to inspect the lower limbs in doubtful cases of lower abdominal pain. Statements made by patients that they were not constipated should not be accepted without confirmation, and in cases of diarrhœa the possibility that loose stools were due to irritation by a scybalous mass should be remembered. Constipation and hæmorrhoids were common causes of abdominal pain, while an overloaded colon might cause much discomfort, pain, and toxæmia, and occasionally a considerable pyrexia. Where malignant disease of the descending colon or rectum was suspected a single rectal examination or a single barium enema might fail to disclose the condition and sigmoidoscopy might fail to show a growth which was present. Repeated examination was required if a doubt persisted. Endothelioma of the peritoneum might cause very severe lower abdominal pain at a time when physical signs might still be indefinite, but ascites would soon follow. Enteroptosis was a common cause of lower abdominal pain, but the appearance of the abdomen on standing would often suggest the diagnosis, while visceroptotic pain had well-recognised characteristics. Abdominal influenza might begin with diarrhœa without vomiting but with collapse, although it was more often thought of as a diagnosis when both vomiting and diarrhœa were present. He mentioned a case in a youth in which there was much blood in the stools associated with great collapse and a typical influenzal tongue and throat, which did not begin to improve until large doses of salicylates were given. Intestinal crises associated with Henoch's purpura, with angioneurotic œdema, with tabes dorsalis—the so-called enterospasm—and even with minute embolic formations in the course of a case of septic endocarditis, should never be forgotten. Abdominal Hodgkin's disease in its early stages was most likely to be confused with other causes of abdominal pain, but in its later stages abdominal pain might occur from deposits in the vertebræ. Abdominal herpes zoster might be preceded as well as followed by intense abdominal pain. The best early guide to the diagnosis was the localised distribution of the pain. In consideration of lower abdominal pain typhoid must not be forgotten.

Mr. **Philip Wrigley** pointed out that pain in the lower abdomen might be due to an extra-abdominal lesion affecting the eleventh and twelfth dorsal and first lumbar nerves in any part of their course, and instanced a case of perinephritis, in which for a considerable time the dominating symptoms were pain in the right iliac fossa and agonising pain in front of the knee. The character of the pain, and whether it remained localised or radiated, or partook of the nature of renal, biliary, or intestinal colic, was often of value in determining its cause. Mr. Wrigley uttered a warning against appendicectomy without careful investigation, and emphasised the fact that the cause of pain in the right iliac fossa was often to be found in the left iliac fossa, being due to distension of cæcum secondary to obstruction in the sigmoid colon from carcinoma or diverticulitis. He was not convinced that visceroptosis was in itself a cause of abdominal pain and believed that the symptom was due to some associated condition such as infection or constipation or to some independent affection.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

A meeting of this Section was held on Jan. 9th with the President, Dr. A. H. Davidson, in the chair.

Dr. D. J. Cannon read notes on a severe case of

Ruptured Ectopic Pregnancy.

The patient, 36 years old, had had several children, and one miscarriage. She was pale, her pulse was just perceptible, and she was very restless. There was a history of a missed period; the lower abdomen was rigid, and there was dullness on percussion. The patient was given morphine and was removed at once to a nursing-home. On admission she was collapsed. She had no pulse. The restlessness had disappeared and she was suffering from profound shock. Operation was deferred, but no signs of reaction appeared for at least four hours after admission. She was then operated upon under gas-oxygen and blood was given by transfusion. She made an excellent recovery.

Dr. Cannon thought that, with rare exceptions, fulminating cases of ruptured ectopic pregnancy should be operated upon as soon as possible. This case was one of the exceptions. To have operated upon her before she showed signs of recovery would probably have been fatal.

The **President** agreed that operation should sometimes be deferred. It was most important that as soon as the operation began, intravenous saline should be given, and that this should not be put off until the operation was over. Gum saline during operation was invaluable.

Dr. **Bethel Solomons** said it was illogical to allow a woman to go on bleeding, and operation should only be deferred until the theatre was ready; during this interval submammary saline was given, and morphine. If the patient lived far away from hospital, the operation should be performed where she lived, for the danger of removal was great; but if she lived near a hospital and was in bad surroundings she could be removed quietly and gently. He did not believe in delay during the operation to search for clots; obvious clots should be removed, the abdomen should be filled with saline, and the patient brought quietly to bed and given restoratives. Transfusion of blood was unnecessary and usually unpractical, but he had never seen submammary saline fail. Dr. Solomons reported several cases showing that the cardinal symptoms of ruptured ectopic gestation could not be relied on.

Dr. **J. S. Quin** said he had seen many cases of ruptured ectopic pregnancy, in the acute and the subacute stage, which had recovered, but he could not remember any which compared with that described by Dr. Cannon as being of the fulminating type. He thought that in extremely acute cases operation should be deferred, and wondered if it would not have been better in Dr. Cannon's case to apply restorative methods in the patient's home at first, and not to have moved her to a nursing-home until the preparations for operation were complete. He thought that the extremely serious condition of such patients was due to intraperitoneal shock, and not to the hæmorrhage. Gas-oxygen was the ideal anæsthetic; ether stimulated the patients for an hour or so after operation, but then they were likely to relapse. If blood transfusion was carried out, the patient was restored to normal health in a few weeks instead of a few months.

Dr. D. G. MADILL said if a patient was really bad, it was advisable to wait a couple of hours before operating and resuscitate her as much as possible. He had operated with gas-oxygen anæsthesia and with open ether, and had got good results with both. Before closing the abdomen, the peritoneal cavity should be filled as full as possible with saline, so that the saline bubbled out when the wound was being stitched. If this was done, the patient did not require transfusion.

Prof. J. S. ENGLISH maintained that operation should be done as soon as possible in these cases. He gave a small dose of morphia, waited for 20 minutes or so until it had had time to take effect and relieve the shock to a certain extent, and then operated. He always pumped the blood out of the abdomen, and then put it back into the patient's veins. He had always had good results, and never a fatal case. In a few cases there had been a slight rise of temperature, but it had subsided quickly.

Dr. J. F. CUNNINGHAM referred to the difference between a state of shock and a state of collapse, and said it was hard to tell whether a rapid pulse-rate was due to shock or collapse. He thought the abdomen should be immediately cleared of blood and the peritoneal cavity filled with saline.

Dr. JOHN MCGRATH, referring to the injection of blood from the abdomen into the patient's veins, said that if hæmolysis occurred in the blood as it must to a certain extent occur in the peritoneal cavity, he thought it would sometimes be extremely dangerous to reinject the blood.

Dr. CANNON in replying said that the agents he employed for the resuscitation of his patient were morphia, heat, and submammary saline. In most cases he thought immediate operation was necessary, but he had no doubt that there were some in which it was wiser to defer operation.

Dr. Cannon showed a specimen from a case of metropathia hæmorrhagica, and Dr. C. J. SHORTALL showed a double monster.

REVIEWS AND NOTICES OF BOOKS

Recent Advances in the Study of Rheumatism.

By FREDERICK JOHN POYNTON, M.D., F.R.C.P. Lond., Physician, University College Hospital; Senior Physician, Hospital for Sick Children, Great Ormond-street; and BERNARD SCHLESINGER, M.A., M.D. Camb., M.R.C.P. Lond., Physician to the Children's Department, Royal Northern Hospital; Physician to Out-patients, Hospital for Sick Children, Great Ormond-street. London: J. and A. Churchill. 1931. Pp. 313. 12*s*. 6*d*.

THE ever-increasing interest in the subject of rheumatism in all its forms has produced such a mass of literature that to keep pace with it is beyond average powers. This addition to the Recent Advances series is, therefore, welcome. The authors have fairly and impartially summarised, discussed, and criticised all the work of value which has been published during the last few years. No author can complain that his contribution to this subject is unfairly reported or boiled down to such an extent as to make the presentation valueless. Each theory or treatment is allotted reasonable space in the book, and then discussed from all points of view. The vexed question of nomenclature is first considered, and some of the better-known classifications given; the authors' suggestion that they all tend to lose sight of the general constitutional disturbances that may occur in addition to the arthritic, muscular, and neurotic manifestations is worthy of consideration. The chapter on predisposing causes is of particular interest. In dealing with the importance of damp as an ætiological factor, the authors emphasise the necessity of preventing the sacrifice of the health of the citizen to the interests of successful speculators in the building trade.

The earlier part of the book is mostly devoted to rheumatism in childhood, in which both authors have had wide experience. The bacterial theory of origin is, of course, favoured, but the balance of evidence in its favour is not unduly stressed. In the section on the morbid anatomy of acute rheumatism the fact that lesions have been described in the pulmonary artery and in the vascular system throughout the body is quoted in support of the argument that rheumatism is a widespread disease, more especially in the vascular system; lesions have, however, also been described in other structures as, for example, the synovial membrane of joints. A chapter is allotted to electrocardiography in acute rheumatism. This branch of investigation has only comparatively recently received special study; it is now possible to confirm the presence of early and transient myocardial changes, suspected but hitherto unproven. The methods of long convalescence used in this country and in America are clearly described; this prolonged rest is probably the most valuable form of treatment we have at the moment, more especially for early and slight cases.

The second part of the book deals with rheumatoid and osteo-arthritis. Here again a very complete summary is given of all recent work. We would have welcomed a little more detail on the subject of the biochemistry of the condition, as far as it has advanced, in order to clear away the mists of tradition. Much loose talk has been allowed in connexion with this aspect of the disease, as, for example, the use of the much abused term "acidity." It seems now well established that the pH of the blood is unaltered in rheumatism, and that therefore all diets directed towards alteration of the reaction of the blood would appear valueless.

Examples illustrating the interest and value of this book could be multiplied indefinitely. We commend it to every one of our readers, for rheumatism, from one point of view or another, is of interest to medical men in every specialty, as well as to those in general or consulting practice.

Anleitung zur Diathermie behandlung.

Third edition. By Dr. G. BUCKY. Berlin: Urban and Schwarzenberg. Pp. 224. R.M. 10.50.

THE third edition of this book differs but little from the second. A short section deals with the nature and properties of the diathermy current, the distribution of the heat generated in various conductors and regions of the body, and the main biological changes brought about by diathermy. The major portion of the book deals with the practical side of diathermotherapy. Various electrodes are described, and details are given in regard to their application to different regions of the body. Under the headings of the respiratory, circulatory, urogenital, and other systems the author names the diseases which can be usefully treated by diathermy; these diseases are stated in alphabetical order, and under each one he summarises the action of the treatment, its results, its method of application, and its duration and frequency. There is a short section on surgical diathermy and a note on the cutting current.

Numbers of simple drawings represent the sites of application of the electrodes when the different regions and organs of the body are subjected to diathermy. These are very helpful. Among the new illustrations is one (Fig. 78) depicting an electrode, of English make, containing a thermometer, and designed for subjecting the cervix uteri to diathermy. Another (Fig. 123) illustrates an ingenious method of applying diathermy to the toes and anterior part of the foot. The foot is placed in water in a shallow tray, and the tray is then sloped so that the water covers only the parts requiring the treatment. A metal plate is placed at the bottom of the tray under the front of the foot. This is connected to one of the terminals of the machine, and the circuit is completed by means of a belt electrode around the calf.

Dr. Bucky's book will be a useful guide for those who are interested in the practical side of diathermotherapy. There is a very complete bibliographical index.

Trial of Harold Greenwood.

Edited by WINIFRED DUKE. London: W. Hodge and Co. 1930. Pp. 347. 10*s.* 6*d.*

Harold Greenwood's trial in 1920 had several points in common with that of Herbert Armstrong some months later. Each was a country solicitor in the South Wales district; each was charged with murdering his wife; each was well supplied with weed-killer, and in each case the wife's body, exhumed some ten months after burial, was found to contain arsenic. Armstrong was convicted and hanged; Greenwood was acquitted. Mrs. Greenwood died in June; her husband's second marriage in October encouraged the suspicions. There was not the usual motive for such haste, nor was there any overwhelming motive for murder. The Crown failed to establish any positive and consistent theory. Its case was that Greenwood gave his wife arsenic in a glass of burgundy. His daughter, giving evidence for the first time as the final witness at the trial, swore she drank wine from the same bottle both at lunch and at supper on the critical day. The prosecution could still suggest to the jury that the arsenic could equally well have been given in tea, brandy, or medicine, but the initial Crown case was shaken. On the other hand the defence, too, was taken by surprise. Mrs. Greenwood's medical attendant (hardly so vigilant as the medical attendant of Mrs. Armstrong proved himself) had stated both at the inquest and before the magistrates that he gave Mrs. Greenwood two morphia pills of gr. ½ each. The defence came to the trial prepared to show that this was a dangerous dose sufficient to account for death. At the trial the doctor explained that when he had said morphia he meant opium; he declared that what he really prescribed was "Pill Opii. ½ grain." There was a legal surprise also. Senior counsel for the Crown, in commenting on the fact that Greenwood's second wife had not given evidence, entirely overlooked the statutory prohibition against such comment in Section 1 of the Criminal Evidence Act, 1898. The error was quickly corrected, but more might have been heard of it in the Court of Criminal Appeal had Greenwood been convicted. The Home Office experts' evidence of the arsenical poisoning was interesting in view of the small amount (gr. 0·275) found in the body. The defence, while denying that the amount was consistent with a fatal dose, suggested it might have been inhaled when walking in a garden where weed-killer had been used. Another bold suggestion was that the medical practitioner, when he gave Mrs. Greenwood a bismuth mixture from a stock bottle in his surgery as a gastric sedative to allay her vomiting, had in error used the wrong bottle, and supplied her with Fowler's solution of arsenic.

The editor's informative introduction to this new volume in the "Notable British Trials" series, tells us that Greenwood died two years ago in a Herefordshire village where he had been living under another name. His action against Madame Tussaud's, for exhibiting him in effigy, recalls that of Morison in 1894, which with similar cases is mentioned in an interesting exposition of the law of personal privacy in the current *Law Quarterly Review*.

Interpretation of Development and Heredity:

A Study in Biological Method.

By E. S. RUSSELL, M.A., D.Sc. Oxford: Clarendon Press. 1930. Pp. 312. 15*s.*

Dr. Russell, who is in charge of the research work of the Ministry of Fisheries at Lowestoft and elsewhere, has written a solid scholarly and withal very readable treatise on the theory of development and inheritance. As in *Form and Function* (1916) his discussion is based mainly on an historical account of the growth of knowledge and ideas on the subject, in which he brings out clearly the importance of considering carefully what Aristotle had to say about it, and reminds us that the great majority of serious students of the matter have found themselves unable to subscribe to a mechanistic interpretation. He argues strongly for an organismal outlook, that is for an integrative rather than an analytical point of view, and his incisive criticism of particulate theories of inheritance in general and of the gene theory in particular will interest many people in these Mendelian days. The criticism is timely, though perhaps Dr. Russell does not distinguish quite clearly between genes as causes and genes as mechanisms; Mendelists are apt to make a complete confusion between the two. Broadly speaking, Dr. Russell's conclusion is that we cannot go further at present than to say that a cat's egg develops into a cat because it is a cat's egg; he is content to wait for further knowledge. Many people will feel that they need some more definite framework for their thoughts. But biologists of all mental complexions certainly ought to read the book.

An Introduction to Surface Chemistry.

Second edition. By ERIC K. RIDEAL, M.A., Ph.D. Cambridge: At the University Press. 1930. Pp. 459. 21*s.*

THE science of surfaces is fundamental and far-reaching. In this basic study the adsorption and electrical phenomena at the four types of interface are discussed with minimal practical details, the author reviewing the theories of surface chemistry and the evidence on which they are founded. Few people have greater facility for the collection and correlation of the diverse data germane to this subject than Prof. Rideal, and if his book is not easy to read it is because he has succeeded in compressing much information into little space.

In the four years that have passed since the publication of the first edition perhaps the most revolutionary observations have been those on the mobility of atoms adsorbed on solid surfaces. The evidence from molecular rays has received confirmation from Volmer, who showed the migration of benzophenone molecules across a glass surface. Still more recently a very beautiful demonstration has been given by Becker; this involves a new weapon, thermionic emission, whose value is made evident in many places in this book. Refinement of apparatus has led to a greater insight into the phases of insoluble films on liquid surfaces, and protein films have been studied lately by Gorter and Grendel. The direct measurement of the electric moments of the molecules in these films, now achieved, opens up great possibilities. At the liquid-solid interface the dependence of adsorption on the reaction of the solution has also been studied. Prof. Rideal has, unfortunately, not made many significant alterations in the chapters on the conditions of stability in suspensions and emulsions and on gels and hydrated colloids. He has thus been unable to insert the very latest work on the adsorption by silica gel. The chapter on differences of potential at interfaces has been almost entirely rewritten; a full discussion of the new electrical theories of adsorption is given, and in view of the immense biological importance of the subject his critical account of the permeability of membranes will be welcomed.

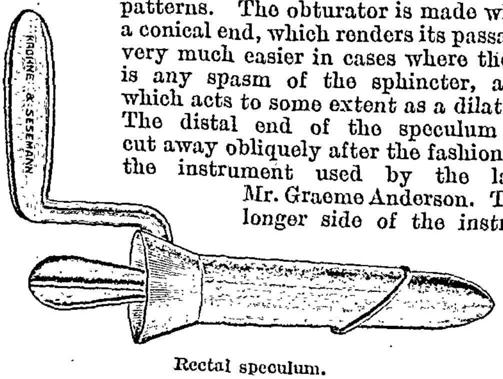
NEW INVENTIONS

A RECTAL SPECULUM AND A STANDARD LAMP.

THE two instruments described below have been made in accordance with my design, and I have found each of them of very material assistance in the treatment of hæmorrhoids by submucous injections with carbolic oil.

THE RECTAL SPECULUM.

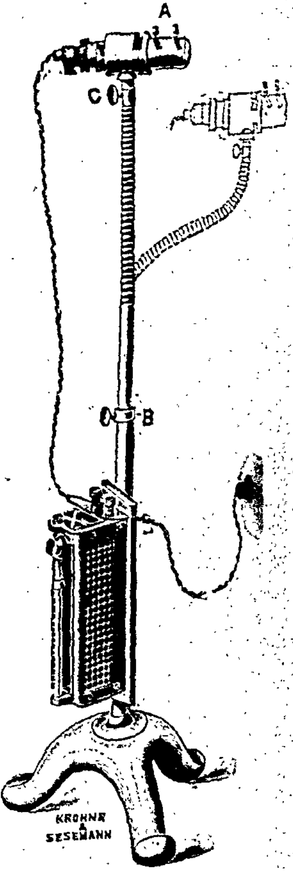
The rectal speculum combines in one instrument several good points utilised separately in other patterns. The obturator is made with a conical end, which renders its passage very much easier in cases where there is any spasm of the sphincter, and which acts to some extent as a dilator. The distal end of the speculum is cut away obliquely after the fashion of the instrument used by the late Mr. Graeme Anderson. The longer side of the instrument from its shoulder to the distal end measures 3½ inches and the shorter side 2½ inches. Using my special syringe, the shaft of whose needle is 4½ inches in length, it is possible to inject under the mucous membrane of the rectum as far up as is necessary. The cut-away end of the instrument facilitates bringing into view the part of the mucous membrane or of the hæmorrhoid that it is desired to inject, the longer side of the instrument keeping other parts out of the way like a retractor. A special point is the shape of the handle. This makes it possible to rotate the instrument in situ round a complete circle, because it is so designed that the horizontal part of the handle stands out clear of the buttocks and does not catch on them as does the ordinary straight handle. This is a much simpler arrangement than the movable collar, suggested by the late Dr. Whitcombe with a similar object.



Rectal speculum.

THE STANDARD LAMP.

The standard lamp affords a powerful light for the illumination of the interior of the rectum through any form of speculum. Formerly, I used a forehead lamp, but there are obvious disadvantages in being tethered by the cable of such an instrument. The lamp illustrated is arranged on a stand with a heavy base. The upright carries a rheostat, which makes it possible to use the lamp from mains of any voltage. The upper half of the upright is flexible so that it can be moved in all directions and to any angle. The lamp may be raised and lowered still further, if required, by pulling out the flexible portion from the rigid lower part after loosening the thumb-screw (B). The lamp itself is fixed on to the top of the column by a hinged collar (C), so that it can be tilted again at this point through an angle of nearly 180°. The lamp is of the Vesta pattern. It is provided with two powerful movable lenses (A), by means of which the focus can be varied at will. It provides a very intense circle of light, the diameter of which can be varied by moving it nearer or farther from the field of operation. I have found it of the greatest assistance in rectal work. It can also be used for laryngoscopic or ophthalmoscopic work and for microscopy.



Standard lamp.

Messrs. Krohne and Sesemann, Duke-street, Manchester-square, London, W., are the manufacturers of both these instruments.

ARTHUR S. MORLEY, F.R.C.S.Eng.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 21, 1931.

BIOLOGY AND STATECRAFT.

THERE can be no proper government of this or any other country, there can be no sound statecraft, that does not take full account of the science of living things and act under its guidance. This is the thesis developed by Sir **WALTER FLETCHER** in a lecture broadcast on Jan. 23rd and subsequently published in *The Listener* (Jan. 28th, p. 127). It is true, as he says, that all recorded human history might be written in terms of the progressive development among the races of man of the arts of hunting and the arts of agriculture. The multiplication of races, their migrations over the earth's surface and across the seas, their success in warfare can all be traced in terms of the discovery by man of new ways of using animal and vegetable life for his own purposes, and in terms of the competition among races to get the benefit of these discoveries for themselves. But this progress has not, he points out, been evenly distributed through the period of civilisation. In the last three centuries our gains in biological knowledge have far exceeded the gains made in the previous 3000, or indeed 30,000 years, and of this sudden speeding-up of discovery the greater part has been even more recent, and falls almost within the memory of men now alive. Sir **WALTER FLETCHER** attributes this spurt to the invention of the microscope and to the widespread use of experiment to supplement observation. We would add another factor which he notes, at least by implication, in the later part of this masterly survey—that a greater proportion of the educated population have enough early training in the rudiments of science and scientific method to act at least as routine workers under expert guidance. The coöperation of trained assistants is essential to the pursuit of experimental biological research on a large scale, especially in agricultural or entomological field work.

Cogent examples of the contribution which a more biological outlook could make to imperial problems are adduced to show that of all nations of the world none has so great a need as England of bringing biology into her statecraft. By greater encouragement of the application within the Empire of what is already known of entomology and genetics, and of facilities for further study of these branches of science, much waste and poverty could be eliminated everywhere; and the argument becomes even more forcible when applied to the special needs of India at the present time. Sir **WALTER FLETCHER** draws a happy picture of the developmental circumstance, which though insects remain the most destructive enemies and rivals of man, has given us the advantage over them in size and brain so that we could, if we tried hard enough, learn to control the ravages they inflict. They have followed in their family descent a faulty engineering model, the converse of the vertebrate plan; they kept their soft parts inside and put their hard skeletons on the outside. This, from mechanical and chemical reasons, has imprisoned them within small limits of possible size. But we have turned our guts about and always wear them inside out; and in so doing have become the masters of our fate. Otherwise the insects might now be the Lords of Creation and our own dim ancestors a series of forgotten fossil forms. They are potent enough in present conditions. Official figures show that in India alone, the loss of crops, of timber, and of animal products by insect damage is estimated at over £150,000,000 annually, and the death-roll due to insect-borne disease at over a million and a half lives. Canada in field and fruit crops and in timber loses 30 million sterling annually, Australia loses 20 millions. In our African Colonies and Protectorates the loss is only partly calculable, because vast areas in Africa are in effect made desert and idle because of the tsetse-fly alone. If human enemies were destroying our lives and property in that degree, or to one-thousandth part of it, the whole nation would be mobilised to fight them. But against the insects we have organised no army worth the name, and we have no policy of recruiting. The youths in our schools and universities are almost wholly unaware either that this imperial need exists, or that they could find any interest and profit in serving it, either by research work or in scientific administration. In connexion with genetics, Sir **WALTER FLETCHER** shows what has already been done in producing wheat not susceptible to rust, a new barley with a higher yield per acre, a better banana crop, and an improved harvest of sugar cane. But public money and public encouragement are lacking or at any rate are inadequate to the needs.

The reasons for this indifference among governments in the past Sir **WALTER FLETCHER** traces ultimately to the effects of the exclusively classical or literary education of statesmen. With India as his text, he has been able deal some shrewd blows at the lack of perception of the biological issues involved in government shown by administrations throughout the world. In the past a purely classical training was an educational background accepted without question as adequate for the administrators of large territories. There is now a growing body of opinion, which has seldom been voiced more effectively than in this lecture, that in the modern world a statesman without at least an elementary knowledge of the means by which natural knowledge has been gained, can be used, and can be increased is as deficient as if he were illiterate.

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TREATMENT OF FRONTAL SINUSITIS.

TWO main reasons account for the difficulty of treating suppuration in the frontal sinuses: first, the sinus is situated in the forehead, where extensive operation produces disfigurement, and secondly, it opens into the nose by a long narrow and tortuous canal surrounded by the anterior ethmoidal cells, usually, if not always, similarly infected. The sinus itself is a broad but relatively shallow cavity, lined by a mucous membrane capable of remarkable swelling, and its adequate drainage is difficult. At one time, indeed, it was believed impossible and the only method of cure employed in inveterate cases was complete obliteration of the cavity by removal of its anterior and inferior walls; this, however, except in the case of a very small sinus, produces distressing disfigurement of the face, and it does not always give complete cure, because that part of the cavity near the ostium cannot be entirely obliterated. With a view to minimising the deformity Killian introduced his well-known method of leaving a bridge of bone along the supra-orbital margin; but this leaves a larger dead space beneath the "bridge" where suppuration may continue; the disfigurement is still considerable, and the bridge occasionally necroses. Many surgeons, therefore, have concentrated their attention on providing adequate drainage into the nose, and they have shown that such drainage is, in fact, possible, and that the mucosa of the frontal sinus subsequently tends to recover; in long-standing cases complete cessation of discharge is not often obtained, but it is usually much reduced, and pain and other symptoms are relieved.

The passage from the frontal sinus into the nose varies very greatly in anatomical disposition; it is often narrowed and bent by the projection into its lumen of one or more of the anterior ethmoidal cells, particularly the anterior group lying beneath the agger nasi, to which attention was directed by Mosher. It is generally agreed that these cells usually participate in suppuration of the frontal sinus, and that they must be exenterated, both to secure an adequate opening and to prevent reinfection of the sinus, if the result is to be satisfactory. This may often be done by intranasal methods, with or without actual enlargement of the ostium; most rhinologists agree that a large proportion of cases can be cured by such means and, indeed, that recent and acute cases will usually recover under simple treatment such as inhalations, or after removal of the anterior attachment of the middle turbinal; but this form of treatment was only touched on lightly at the meeting we report on p. 410. One important technical advance, which was introduced by Killian, is to prolong the supra-orbital incision down the side of the nose and to remove a large part of the nasal process of the superior maxilla. This procedure gives excellent exposure of the frontonasal canal and makes it easy to remove the anterior ethmoidal cells, and, if necessary, all the cells back to the sphenoid; it forms an essential part of the operation described by Mr. W. G. Howarth, who also removes a large part of the os planum of the ethmoid. Other rhinologists do not think it necessary to remove the os planum, and dispense with the rubber drainage-tube which Mr. Howarth retains for ten days. In some cases the new frontonasal duct tends to contract, which has induced Mr. V. E. Negus to employ skin-grafts. The ingenious method of Mr. Douglas Harmer and Mr. Bedford Russell to dilate the duct by soft rubber catheters recalls the metal style used by Mr. Lambert Lack over 30 years ago, but is much more refined in technique, and seeks to dilate so gradually that the mucosa of the canal is undamaged. Its chief disadvantage is that the treatment must often be prolonged over many months, during which the small wound in the forehead remains open, and that the resulting scar is in consequence rather conspicuous. The method, of course, takes no account of concomitant disease of the ethmoidal cells.

Although the report by Dr. J. S. Fraser and Dr. J. P. Stewart shows a large proportion of cases operated on by complete obliteration, a general tendency towards a less extensive type of operation was manifested at the meeting. The discussion made it clear that the problem of the treatment of these difficult cases is not yet finally solved.

CEREBRO-SPINAL FEVER.

The seasonal rise of prevalence of cerebro-spinal fever has been attended this winter with serious local outbreaks in the West Riding of Yorkshire and at two military camps in the South of England. This renders it opportune to remind ourselves of the main features of the disease and to recall what was learned from the epidemics that occurred during the years of the late war. Cerebro-spinal fever is essentially a disease of winter and spring. The majority of recorded epidemics have begun during one of the four months, December, January, February, and March, the maximum intensity of the outbreak being reached in April or May: by the end of July the epidemic is over. A relatively small proportion of any community contracts the fever and statistics show that direct spread from one patient to another is unusual. Further, only a small percentage of those exposed to the risk of infection develops the disease, although they may become carriers of the meningococcus in the nasopharynx. Investigations in the Woolwich military district during the war showed that about 10 per cent. of individuals coming into contact with cases of the disease became carriers, while among non-contacts—that is, the general population—the carrier-rate was only 1·86 per cent. Bearing in mind the fact that the meningococcus can be obtained from the nasopharynx of practically all cases of cerebro-spinal fever during the first week of illness and from the preceding observations, it is clear that the secretions of the nasopharynx of both cases of the disease and of carriers are infective and by such secretions the organism may be transmitted to those with whom cases or carriers are in proximity. Individuals who thus acquire the organism may develop the disease or, as most frequently occurs, they may merely harbour it in the nasopharynx for a varying length of time and so be capable of transmitting the disease to others. At the present time the bulk of evidence is in favour of the spread of the organism from nasopharynx to nasopharynx inside houses, schools, theatres, and wherever large numbers of people congregate together. The influence of overcrowding and unhygienic surroundings in determining the number of positive contacts has been abundantly proved. Among predisposing causes of the disease are sudden and marked variations in temperature to which a particular community is unaccustomed; overcrowding and deficient ventilation; fatigue and the presence of catarrhal conditions affecting the nose and throat, while mobilised troops, especially recruits, and children living in populous cities are particularly susceptible to the disease. Since the meningococcus rapidly perishes when exposed to temperatures lower than 22° C. (71·6° F.), air-borne infection can only take place in a very warm atmosphere. The tendency for people during the colder weather to collect in overheated rooms with natural ventilation shut off certainly provides conditions under which such infection may occur.

The ideal procedure to be adopted on the occurrence of a case of cerebro-spinal fever would appear to be as follows. The patient should at once be removed to an isolation hospital or special ward and as far as possible the contacts of the case should be segregated and swabs taken from the nasopharynx of each to ascertain the presence or otherwise of the meningococcus. By the term "contacts" is meant those individuals living in the same house, taking meals or working in the same room as the patient at the time of and during the week preceding his developing the disease. In civil practice, apart from institutions, it is usually impracticable to segregate all contacts and keep them isolated until the results of the post-nasal swabs are known; one has usually to be content merely with swabbing the nasopharynx of each of the contacts and awaiting the result. A period of quarantine as a preventive measure is in itself quite useless, since some carriers are known to harbour the meningococcus for as long a period as three months; effectual control can only be guaranteed by the production of bacteriological proof that the nasopharynx of contacts is quite free from the organism. When definite carriers are identified, they should be kept in isolation and treated until the nasopharynx is free from meningococci as indicated by not less than two successive swabs, taken at intervals of several days, yielding a negative result. Considerable difference of opinion has existed as to the precise value or otherwise of treatment applied locally to the nasopharynx for the disinfection of carriers. The meningococcus however, being one of the least resistant to disinfectants of all pathogenic organisms, is rapidly killed by some of the mildest antiseptics in a concentration easily tolerated by the mucous membrane of the nasopharynx. Theoretically, therefore, the organism should be destroyed in the nasopharynx with comparative ease provided it were reached by a suitable disinfectant. Strong antiseptics may be positively harmful, as, by injuring the delicate mucous membrane, they may set up inflammatory trouble and thereby render the meningococcus more difficult to eliminate. In the Woolwich military district the substance known as chloramine T (sodium toluene-para-sulphochloramide) was found a suitable disinfectant and was used with considerable success. Possessing pronounced germicidal properties, chloramine T does not cause precipitation or coagula in secretions or exudates, a fact that renders it of value for acting on micro-organisms contained in such fluids. A 1 per cent. solution of chloramine T is used, the carrier being directed to sniff the liquid from the palm of the hand into the nose and return it through the mouth. This procedure is repeated several times each morning and evening, the course of treatment lasting three or four days and being repeated if necessary. During fine and warm weather, carriers tend to rid themselves of the meningococcus more rapidly.

The onset of cerebro-spinal fever may be sudden and abrupt or, less frequently, gradual. The patient complains of sudden chilliness or rigors and these symptoms are succeeded by severe headache, loss of appetite, and vomiting. Early diagnosis is of paramount importance, since the earlier treatment is begun, the better is the prognosis. The great importance of early treatment cannot be sufficiently shown by statistics because in every considerable number of cases there must occur some of a fulminating type which prove fatal within 12 to 48 hours, treatment having little or no effect. The chief and characteristic diagnostic signs are: (1) a sudden onset in a patient previously well or complaining only of a cold, with rigors, increasingly severe headache, and vomiting; (2) early delirium or stupor in a pyrexial patient; (3) some degree of rigidity of the posterior muscles of the neck; (4) Kernig's sign; (5) in infants, tension and bulging of the anterior fontanelle. Secondary signs of value when present are: *(a)* a petechial or purpuric rash; *(b)* retention of urine; *(c)* a state of irritable stupor with active withdrawal of the leg on plantar stimulation; *(d)* comparatively slow pulse-rate with high temperature. The experiences of 1914–18 showed quite definitely that the most efficacious form of treatment was the application of a reliable immune and polyvalent serum injected intrathecally at the earliest possible moment after drainage of the subarachnoid space by lumbar puncture. The initial dose of anti-meningococcal serum should be not less than 30 c.cm.; this amount is then administered daily until clinical improvement is definite and undeniable, and until meningococci have disappeared from the cerebro-spinal fluid. A disquieting feature of the present epidemic is that recently serum treatment appears to have been of little avail and the mortality has been exceptionally high. Experience during the war showed that therapeutic serum varied remarkably in potency, and that while the best sera reduced the case mortality to under 20 per cent., many were apparently useless. The serum treatment of the disease in Denmark in recent years has given such poor results that it has been discontinued, and medical opinion is not favourable to it in Sweden.[1] In Roumania, on the contrary, whilst the mortality of the cases treated by other methods amounted to 65 per cent., that of a recent series of 101 cases treated by serotherapy was 18·3 per cent. and (omitting cases which were comatose on arrival or died a day or two after admission to hospital) 10·9 per cent., figures which compare favourably with the best results of univalent type 1 serum prepared in the Medical Research Council's laboratories in 1918. French experience is stated to be strongly in favour of serum treatment. The manufacture of potent antimeningococcal serum is a process of great difficulty and uncertainty; sera prepared by the use of strains of the meningococci prevalent in one epidemic may be of no value when used in an epidemic some years later. Even successive batches issued by the same laboratory vary remarkably in value. M. H. GORDON is of the opinion that the power of neutralising the endotoxin of the meningococcus is probably the best laboratory index of therapeutic potency, since a serum may possess high agglutinin and opsonin content and yet have no therapeutic potency. The preparation of new sera from strains isolated in the present epidemic is an urgent necessity, which is fully realised by the bacteriologists engaged in this work. The present epidemic as far as the types have been determined is, like the Glasgow epidemic of 1929, predominantly due to type 1. It will be remembered that the war-time epidemic was predominantly type 1 in its earlier phases, later type 2 became the more common, and then in 1918 type 1 again became the prevalent strain. Unless and until a potent serum is available, early drainage by lumbar puncture, which should be repeated daily for four or five days, is probably the most effective treatment.

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[1] Bulletin of the Office International d'Hygiène Publique, 1930, xxii., 2.

With regard to the prophylaxis, careful observation of the general rules of personal hygiene is the best safeguard against contracting the disease. The nearest approach to open-air life should be followed, crowded assemblies should be avoided as far as practicable, and no excessive fatigue should be incurred. One of the most important centres of *infection in the Glasgow* epidemic was a crowded and ill-ventilated recreation room for youths, 10 cases, several fulminant, being probably thus infected. In selected communities such as schools, hospitals, and barracks the distance between beds should be increased to the utmost possible: a distance of 3 ft. clear between the edges of adjacent beds being *regarded as the minimum* for healthy persons, whilst in wards, especially those in which influenza patients are being nursed, the interval should be at least 6 ft. and preferably 8 ft. The importance of making effort to prevent the spread of all catarrhal diseases by special precaution in coughing and sneezing, so as to avoid scattering infectious droplets, is again emphasised *in* connexion with this disease.

ANNOTATIONS

THE CHILD FROM SEVEN TO ELEVEN.

THE report just issued by the consultative committee appointed by the Board of Education[1] to inquire into the courses of study suited to children from age 7 to age 11 in elementary schools, like its predecessor dealing with children over 11, evinces a modern and scientific outlook on the problems presented. Unlike the education of the past which aimed at leading the child along educational channels theoretically determined, that of the present aims at fitting education to the needs of the child, aiding them to be "vigorous in body and lively in mind" in preparation for the more serious demands which later life will make upon them. A study of the mental and physical conditions of children within the age limits prescribed was regarded, therefore, as a fundamental pre-requisite for any rationally based conclusions, and it is no disparagement of the rest of the report to say that its most vital chapters are the two appendices dealing with these conditions: that on physical development contributed by Dr. H. A. Harris, assistant professor of anatomy at University College, London, that on mental development by Prof. Cyril Burt, psychologist to the London County Council. Both writers have to admit that the years of the child's life in question have not yet been adequately studied—Dr. Burt calls them the "dark ages" of childhood—and they both deprecate educational methods which are based upon inaccurate traditional notions regarding this period. Infancy and adolescence have monopolised attention, it is held, too exclusively. Nevertheless a fair amount of knowledge, even if somewhat disjointed, has been accumulated on both the mental and physical conditions of the period.

Dr. Harris distinguishes six periods of growth between birth and adolescence, three "springing-up" periods, the first year, the years 5 to 7, and the years of puberty, alternating with three "filling-out" periods, 1 to 5, 7 to 11, and the years of adolescence. The years under consideration are those of the second "filling-out" period, and from the medical and educational standpoints their significance, he contends, lies in the fact that at this time the child "presents in varying degrees the sequelæ of the acute infections" of the younger years. It is a period burdened with a heritage of past diseases and deficiencies, manifested in faulty dentition, defects of vision, middle-ear disease, enlarged tonsils and adenoids, and diseases of lymphatic glands. These four years provide opportunity to remedy these past errors and to prepare the child for the demands that the next "springing-up" period of puberty will make upon him, and the last opportunity, in school at least, to raise the norm of physical efficiency. It is a period therefore for which special responsibility rests upon the school medical service, the second of whose routine inspections falls within it. Anthropological measurements give a totally inadequate conception of growth. Different tissues and organs grow at different rates and cease growth at different ages. Growth rate at any moment is the resultant of a considerable number of growth rates, each of which may be affected in different degrees by diseased conditions. Dr. Harris reminds us that growth is not a mere matter of proliferation of existing cells, but *involves* also cellular differentiation of function. He quotes Scammon's four types of growth, skeletal, neural, lymphoid, and genital, each with its own rate and maximal periods; but even these do not cover the complexity of growth. In the matter of sex differences, it is interesting to note that the bony signs which herald the cessation of growth start at an earlier age in girls than in boys, and that the female brain is remarkably precocious although its growth does not persist so long. "Sexual differences are as complicated at 10 years of age as at 14." Skeletal, osseous, and endocrine systems develop differently in boys and girls throughout childhood and there is no basis for coeducation from age 7 to 11 on the ground that sex differences are insignificant then. A section on types of body-build leads to the conclusion that all are consistent with good health and efficiency and that there are marked limits to any attempt to alter the build. Bodily habitus may have much to do with the determination of mental characteristics, but the anatomical basis for psychology is still to discover. Definite knowledge even of the relation between mental variations in individuals and histological brain variations is still very imperfect, apart from the study of cases of marked amentia or dementia. Dr. Harris gives an outline of the work that has been done towards achieving an index of the relative proportions of body and brain in animals and man, and points out the significance of Anthony and Coupin's "Index of Cerebral Value," which expresses the relation between actual brain weight and calculated brain weight, this last being "the brain weight of the adult if said adult were reduced to the size of the young individual in question." This index is at a maximum about the seventh year, the second springing-up period, and there would appear to be some relation between this fact and the marked alteration of mental activity noted to occur about this time by educators so observant as Froebel and Montessori. Dr. Harris concludes with a warning of the necessity for care of the muscular system during the period under review, because, although its chief developments fall outside the period, it is very sensitive, on the one hand, to illness and malnutrition, and on the other, to feeding and exercise. His plea for a sufficiency of sleep will be generally accepted by the medical profession. Excessive homework, social claims, compulsory sports, the cinema, the loud speaker "present an accumulation of physical and intellectual exigencies" which interfere seriously with sleep, and which cannot be counterbalanced by vitamins and artificial sunlight.

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[1] The Primary School. H.M. Stationery Office. Pp. 290. 2*s.* 6*d.*

Dr. Burt sets out how the power of sustained attention increases rapidly during the period considered: mental fatigue is more apparent than real, being chiefly physical; memory, at first mechanical, becomes at 9 more logical and should be encouraged in this development; imagery is largely concrete and visual throughout the period; reasoning in the form of perception of simple relations of space, quantity, similarity, and contrast is present even at 7; extreme susceptibility to suggestion is a marked feature. Interests between 7 and 13 years become less personal, more objective and specialised, but the one marked interest of this period is that of making things, while the special feature of play at this time is that, while the child is less individualistic, he cannot be said as yet to play with others, but rather against them. The primary object of these two sections of the report was no doubt to give a basis for educational recommendations to the committee, but apart from that special object, they are full of interest and suggestion to the practitioner and the school medical officer, whose daily work it is to guide and control so far as possible the growth, nutrition, and activities of children.

ELECTRO-SURGERY IN VISCERAL OPERATIONS.

MORE and more attention is nowadays paid by surgeons to the "cutting current" and some experiments have lately been done by H. E. Pearse and G. E. Ward[1] to ascertain the hæmostatic power of these currents in operations on highly vascular organs such as the kidney, liver, and spleen. The experiments were performed on dogs. In some a wedge-shaped elliptical segment was excised from the kidney, no clamp being placed on the vessels of the pedicle; the cut surfaces were brought into apposition and sutured. In these animals the kidney of the opposite side was cut in a similar manner with a scalpel. In other animals a broad disc-shaped mass was excised by the cutting current from the cortex of the kidney, and the organ was replaced without sutures in the abdomen. In others again an entire pole or half the kidney was excised, and the remainder returned to the abdomen without sutures or packing. Similar experiments were made on the liver and spleen, portions being excised and the rest returned to the abdomen. In removal of a wedge-shaped mass from the kidney it was observed that the bleeding caused by the cutting current was much less than that caused by the scalpel; it came from the larger vessels and was quickly controlled by the clamp-and-coagulation method. The cut surfaces could then be brought together and deliberately sutured on a dry field. The repair was found to be not dissimilar to that following the knife operation, the final scars being indistinguishable from one another. During removal of the disc-shaped masses there was but little bleeding, and healing was satisfactory. For the removal of a pole of the kidney, or half the organ, a tonsil-snare carrying the current was employed. There was no hæmorrhage, but there was greater destruction of tissue on each side of the cut. In the experiments on the liver Pearse and Ward describe the results as some of the most spectacular in surgery. Large masses of the organ were excised without any bleeding. In a few cases there was slight bleeding from the central artery; but this was quickly stopped by the clamp-and-coagulation method. The spleen was found to be a less favourable organ for attack with the cutting current. When, however, a snare electrode was employed and a heavier current used it was found that portions could be excised without bleeding. The cut surface was covered with omentum, and healing occurred by fibrosis. There was no secondary hæmorrhage after any of the operations, and the experiments seem to show that it would be safe to perform operations on the more vascular organs in the human subject by means of the cutting current, either with little and easily controlled hæmorrhage, or even without any bleeding at all. One very important point—not realised by every surgeon in this country—is well brought out by the investigators. It is the necessity for employing a modified current for procuring hæmostasis when highly vascular organs are cut. A current which is most suitable for this purpose is not the best for cutting skin, fasciæ, and muscle, and obtaining healing by primary union. The absence of secondary hæmorrhage after the experiments by Pearse and Ward should be noted. They point out that it may occur after operations on the mouth and throat, and they attribute it to sepsis. They call attention to the fact that there are now many different types of generators of cutting currents, and that these are not always precisely similar. For this reason they utilise the term "electro-surgery" at present to cover the operations performed by the different kinds of current.

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[1] Amer. Jour. Surg., 1930, n.s. x., 540.

PERCAINE ANALGESIA.

THE technique of spinal analgesia with percaine, which has been carefully elaborated in this country by Dr. Howard Jones, is the subject of a recent paper by Prof. B. Quarella, of Turin. His experience has so far been comparatively slight, being based on some 500 cases only, but he has been pleased with his results. The technique he describes differs materially from that of Howard Jones inasmuch as he does not employ a very dilute solution, and apparently does not place the patient face downwards for the first few minutes after making the injection. It is not unlikely that one or two rather disappointing instances which he mentions are to be attributed to this omission. Dr. M. G. Luquet, in an accompanying contribution,[1] is enthusiastic over his own experiences with percaine, and he has followed the directions of Howard Jones.

DIGESTIBILITY OF RAW AND COOKED MEAT.

To most civilised people the thought of eating raw flesh is distinctly repugnant. The practice of cooking meat not only renders it more attractive in appearance, taste, and smell, but makes it less liable to convey diseases which might otherwise be spread by the agency of pathogenic bacteria or living parasites which it might contain. It is, however, clear that both the digestibility and the nutritive value of animal flesh may be altered by varying degrees of cooking and this effect has often been studied. The latest investigation is by Miss W. M. Clifford,[2] who has compared the rates of digestion of raw, under-cooked, and over-cooked meat by pepsin and trypsin in vitro. Raw beef was found to be less rapidly digested than any variety of cooked beef, with the possible exception of overdone boiled steak. Underdone beef was digested more rapidly than over-cooked meat and the maximum rate of digestion was obtained with lightly roasted joints which were bright red and moist below the surface. Meat which was browned right through as the result of prolonged roasting was more easily digested than either raw meat or meat which had been boiled for one hour. There is a prevalent notion that twice-cooked meat is considerably more indigestible than meat which is served after but one heating. In these in-vitro experiments it was found that merely re-warming underdone beef had no effect on its digestibility, although re-heating the same sample for sufficient time to bring it into the category of over-cooked meat resulted in the same loss of digestibility as would have followed over-cooking in the first instance. There is, therefore, in these experiments some support for the view that the man who normally enjoys underdone meat may find twice-cooked meat indigestible. When, moreover, account is taken of the fact that the sight and taste of a dish of re-cooked meat are repellent to some people and therefore may lead to an inadequate secretion of appetite juice in the stomach, it can be understood why certain sensitive individuals may show a real intolerance to this kind of food. As regards the relative degrees of utilisation of raw and cooked meat, the evidence favours the view that cooking enhances rather than lowers its nutritive value. In isolated examples, as for instance among the Eskimos who may subsist entirely on animal food, cooking may destroy the accessory factors contained in meat and not supplied from any other source, thus leading to serious nutritional disturbances. Many observations have been made on the effect of different degrees of cooking on the nutritive value of meat used as the principal source of protein in the diets of omnivorous animals such as the rat. In most experiments of this kind it has been found that the animals thrive better on cooked than on raw meat, provided that the diets contain all the necessary accessory factors and are palatable. However advisable it may be therefore for some kind of raw food to be included in a diet, there are certainly no reasons for suggesting that meat should be one of the articles taken in this way, unless meat should happen to be the only article of food available to support life for prolonged periods.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

THE Royal College of Physicians of Edinburgh was founded in 1681, and it has been decided to celebrate the 250th anniversary of its foundation on St. Andrew's Day, Nov. 30th, 1931. An attempt to incorporate the practitioners of medicine in Scotland for the purpose of raising the standard "both of the character and acquirements of physicians" originated in 1617, and in 1621 an application was made to King James I. of England and VI. of Scotland for facilities to that end. The King accordingly issued an order to the Scottish Parliament for the establishment of a college to fulfil the design indicated, but political and religious dissensions prevented the scheme from being carried out, in spite of a characteristic expression from the learned monarch as to the public risks from charlatans. A further attempt was made in 1630, when King Charles I. referred the matter to the Privy Council, but the unsettled state of the country again delayed the project. With Cromwell in power accomplishment took a stride further, for the Protector took up the matter warmly, and a patent was made out in 1656 instituting a College of Physicians of Edinburgh. The patent, however, gave powers to the proposed college which did not meet with general acceptance among doctors, and Cromwell's death put a stop for a time to the proposals. Eventually a charter of incorporation was obtained in the reign of Charles II., chiefly through the exertions of Sir Robert Sibbald and the Earl of Perth, though others active in the movement were Sir Charles Scarborough, physician to the King, and the Duke of York and Albany, afterwards James II. The Great Seal was appended to the Charter on St. Andrew's Day, 1681. The first president of the College was Archibald Stevensone, and an early movement of the new College was to recognise the call of medical charity by instituting a "phisitian to the poore of Edinburgh."

Owing to the destruction of the early minutes of the College, the exact scene of the original meetings of the corporation is in doubt; it may have been the house of Sir Robert Sibbald, the virtual founder of the College and its President in 1684. In 1698 the College resolved to purchase a house especially because of the growing size of the library; but the members continued to meet in apartments rented for the purpose until 1704. In this year a property was bought in Fountain Close, belonging to a Sir James MacKenzie, and seven years later some adjacent land was added, by which time, we learn from contemporary writing

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[1] Bull. et mém. Soc. de Chir. de Paris, 1930, xxii., 780.

[2] Clifford, W. M.: Biochem. Jour., 1930, xxiv., 1728.

"the grounds and the shrubbery were the envy of the neighbouring Peers, to several of whom the privilege at their request was granted to walk in them as a favour." We may note that the total price of the site and the extension was 5800 marks, or about £320. The buildings erected, however, were not worthy of their environment, and plans for their improvement did not find favour, so that a request was made by the College to the Royal Infirmary for permission to hold meetings at the institution, as well as shelter for the books which were suffering injury. The Infirmary was founded about 50 years later than the College, and may be said to represent the development of the action of the College in appointing members of their body to attend the sick poor. For 15 years the College enjoyed the hospitality of the Infirmary and the premises in Fountain Court were sold in 1770 for £800. A College Hall was commenced in George-street in 1775, when the foundation-stone was laid by the famous William Cullen, the President. The present Hall, designed by Thomas Hamilton, dates from 1844, the adjoining premises having been added at different times. The story of the College, especially in its various connexions with the Royal Infirmary, illustrates the progress of academic and clinical medicine in Edinburgh from the union of the two kingdoms.

THE FULHAM CHIMNEY-STACK.

On Jan. 27th the Electricity Commissioners announced their consent to an extension of the generating station at Townmead-road, Fulham, proposed by the Fulham Metropolitan Borough Council. In doing so Sir John Brooke, chairman of the commissioners, mentioned the obligation to secure an adequate supply of cheap electricity in London by the autumn of 1933, and he gave this as a reason for consenting to the installation before the best means for the elimination of sulphur from fuel gases has been finally settled. It was a disappointment to the London County Council and to the Councils of Westminster, Kensington, and Chelsea, which were associated with it in opposing the application, that it should have proved necessary to instal a power station at all in that part of the Thames valley; the promoters, however, were able to point to an unforeseen growth of industry along the Great Western railway line as it approaches London, and of an extraordinary demand for electricity for all purposes in this area. This development it is that has stood in the way of banishing all these large generating stations "below bridges," as the euphemistic phrase runs for putting them in the neighbourhood of Barking; Fulham assured the commissioners that it would cost an extra £2,240,000 to bring the mains under ground if the station was erected down river, or a yearly rental of nearly £200,000. But although the representations of the four councils were powerless to restrain Fulham from erecting a vast new chimney-stack, they were effective in prescribing conditions for the effluent gases. The councils submitted that there should be adequate safeguards for dealing with sulphur fumes or noxious gases, smoke, grit, coal-dust and other particles, and water; that periodic analyses should be made of the effluent gases, and opportunity given to visit and verify results; that the sulphur content of the effluent gases should not be more than gr. 0·02 per cub. ft. expressed as sulphur; that no visible dark or opaque smoke should be emitted save a certain amount of condensed steam in cold weather; that no grit or other particles should be emitted so as to cause a nuisance; and that any chimneys should be not less than 300 ft. high, with arrangement for warming the gases before discharge. Finally, and most significant, is the provision that in the event of improved plant or devices being discovered, such improvements shall be introduced into the power station at the word of the Electricity Commissioners. The decision of the commissioners on this point is so precise and inclusive that it may serve as a precedent for similar undertakings. If the Electricity Commissioners, in agreement with the Commissioners of Works and the Minister of Health, shall decide that the methods used by the Borough Council are not the most efficient methods reasonably practicable at the time, the Borough Council shall thereupon at their own expense forthwith carry out and put into continuous use all such changes in the said methods as may be specified by the Electricity Commissioners, in agreement with the Commissioners of Works and the Minister of Health. While the commissioners were fully agreed that the best practicable elimination of oxides of sulphur should be striven after, they did not see their way to prescribe in their formal consent the precise degree of efficiency to be attained at any time by the sulphur elimination plant. The obligation on Fulham to keep in touch with the progress of knowledge and to adapt its effluent gases to that knowledge, is a far more valuable safeguard than the prescription of a minimum limit of sulphur, which we may well hope is to be reduced to a vanishing quantity. Otherwise, however high the chimneys, there may come an occasion when owing to stillness and temperature inversion the atmosphere of the neighbourhood may become seriously or even dangerously polluted.

AUTO-TRANSFUSION.

In a discussion on ruptured ectopic pregnancy reported on p. 413 several speakers referred to the method of "auto-transfusion" or return of the patient's own extravasated blood to the circulation. The history and use of this method have lately been reviewed by Dr. G. E. May[1] who thinks it is sometimes of inestimable value. The contra-indications, he says, are few, for an old chronic salpingitis does not seem to contaminate the blood and when life is at stake it is worth risking a mild infection. Obviously blood from the peritoneum should not be used if there is frank infection, or if it is stagnant, as when bleeding has been going on for days or weeks. The apparatus he describes is simple, comprising a beaker, a rod, a funnel, two cups, and two 50 c.cm. ampoules of 2 per cent. sodium citrate. A suction apparatus is useful, but not necessary. The quantity of citrate used is 10 c.cm. of 2 per cent. solution for each 90 c.cm. of blood. The abdomen is opened with the patient lying flat; a small incision is made in the peritoneum and the edges are held up to prevent loss of blood. A cup is placed against one edge of the incision, and the blood is run into it and quickly transferred to the beaker containing the citrate which is constantly stirred by a nurse. The peritoneal incision is then enlarged, the tube is brought up and its bleeding stopped, and then the remaining blood is baled out with the cups. The patient has been receiving saline solution throughout the operation and the citrated blood is added to the saline by filtering it through 15 to 20 layers of gauze in the funnel into the gravity flask. The infusion should be made by gravity rather than by pressure, so as to avoid overloading the right side of the heart. May reports two cases in which this method was followed with very satisfactory results.

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[1] New Eng. Jour. Med., Dec. 11th, 1930, p. 1197.

AN INDEX OF PHYSIOLOGY.

Dr. J. G. Priestley, of Oxford, has accomplished his task of preparing a subject-index to the first 60 volumes of the *Journal of Physiology*. It was in 1873 that the late Sir Michael Foster published the first of three volumes of papers from the physiological laboratory of Cambridge University which stand in ancestral relation to this journal; he asked the Master and Fellows of Trinity College, whose prælector he was, to regard the pages as "the first cotyledonary leaves which may assure them that the seed they have sown has germinated, but which can tell little what kind of plant it will grow to or what manner of fruit it will bear." Foster lived long enough to see at least a part of the immense development of physiology which has occurred in recent years, and of this development, as Dr. Priestley says, no insignificant part is represented by papers in these first 60 volumes. The subject-index is a companion volume to the History of the Physiological Society during its first 50 years (1876–1926), written by Sir Edward Sharpey-Schafer and issued by the society as a supplement to the journal in Dec., 1927. In this survey he drew largely on the minute books of the society, all of which have been preserved, and he recalls that when Foster established the *Journal of Physiology* in 1878 there was no journal in the English language wholly devoted to physiology, and it took at once a leading position as a medium for publication of original work. In 1894 the management was taken over by G. J. Langley, on whose death in 1925 the journal became the property of the society. An author-index of the same 60 volumes has also been issued, and these three special numbers of the journal, covering as they do an important period in the history of science, represent an act of piety in preserving the work of a generation which is passing or has passed.

ANTIVENEREAL PROPHYLAXIS.

On Feb. 9th Surgeon Commander H. R. B. Hull read a detailed paper on antivenereal prophylaxis in the Services to a meeting of the United Services Section of the Royal Society of Medicine. Chemical prophylaxis, he said, is giving unsatisfactory results, and he therefore recommends mechanical prophylaxis—in which he agrees with Dr. J. A. Cavaillon, Secretary-General of the International Union against Venereal Disease.[1] Lectures do not prevent the men from taking risks, and the interest aroused by films is not always the interest that is desired. The results of disinfection are not as promised, and their failure is not due to intoxication as is sometimes alleged in excuse. Commander Hull fears that the antiseptics used, such as calomel cream, cause a slight irritation of the delicate mucous membrane, and perhaps increase risk. Only from Iraq, where disinfection is done in every case by a trained orderly, was a hopeful note presented in the discussion. Since infection is maintained by these women, it was asked whether instruction about disease and disinfection should not be given to them. This has been tried in North Africa and, it is claimed, with success. In the last thirty years, 1900–29, venereal disease in the Navy has greatly diminished; cases have fallen by a third (120 to 73 per 1000), and the days lost under treatment have been halved. The reduction is chiefly in syphilis, especially secondary, its cases having fallen by 90 per cent. (21·8 to 1·84 per 1000) and its invaliding by 85 per cent. (1·64 to 0·22). Sores have fallen a half, and only gonorrhœa remains on about the same level as formerly. The fall in venereal disease is masked in the statistical reports by the similar, though less marked, diminution in all illness during these 30 years.

SURGICAL AND BIOLOGICAL RESEARCH.

The great liberality of Mr. Buckston Browne in establishing an Institute for Surgical and Biological Research in connexion with the Royal College of Surgeons of England has been described in our columns (see The Lancet, Jan. 3rd, p. 29), but the text of the letter in which the splendid gift was offered to the College is now published in the transactions of the last Council meeting. The wisdom and the open-handedness alike of the donor appear in the few sound conditions implied, and only just implied, in the offer, as well as in the great pecuniary total of his generosity.

THE ABOLITION OF UNIVERSITY FRANCHISE.

Protests against the clause in the Representation of the People (No. 2) Bill which would abolish University franchise have been more widely signed since the Bill came actually before the House of Commons. Perhaps no class is more likely to lose a power of voting in this way than the medical profession, so that when the measure is before a Committee of the whole House the medical members may be in some cases embarrassed by the absence of agreement between their party and their professional call.

The Milroy lectures of the Royal College of Physicians of London will be given on Feb. 26th and March 3rd and 5th by Surgeon-Captain S. F. Dudley. His title is Some Lessons of the Distribution of Infectious Disease in the Royal Navy. Dr. Macdonald Critchley will deliver the Goulstonian lectures, on the Neurology of Old Age, on March 10th, 12th, and 17th, and Sir William Willcox the Lumleian lectures, on Toxic Jaundice, on the 19th, 24th, and 26th. All these lectures will be given at 5 P.M. at the College in Pall Mall East, S.W.

International Course at Locarno.—The second of the international medical post-graduate courses arranged by the Tomarkin Foundation of New York will be held at Locarno, Switzerland, from April 14th to 28th. Among those who have already consented to give lectures are Prof. E. Abderhalden (Halle), Prof. F. Blumenthal and Prof. F. Neufeld (Berlin), Prof. A. Calmette, Prof. C. Levaditi, Prof. P. Vallery-Radot, and Prof. C. Regaud (Paris), Prof. J. Jadassohn (Breslau), Baron Korányi (Budapest), Prof. R. Leriche (Strasbourg), Prof. W. Neumann and Prof. F. Silberstein (Vienna), Prof. C. Pe (Milan), Prof. L. Asher and Prof. F. de Quervain (Berne), and Prof. P. Uhlenhuth (Freiburg i. Br.). Locarno, which is now the European headquarters of the Foundation, is situated at the foot of the Southern Alps on the shores of Lake Maggiore. Further particulars of the course may be had from the secretary of the Tomarkin Foundation, Locarno (Box 128).

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[1] Second Conference on the Health and Welfare of Merchant Seamen, 1929, p. 157.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

VIII.—SEXUAL CONTRASTS.

INTRODUCTORY.

THE subject of this lecture is one of the most difficult in all psychology. Strange though it may seem, psychologists are not at all sure as to what the difference between a man and a woman really is. It has been a subject on which much has been written, but mostly for our purpose of doubtful value. This lecture is offered with great diffidence, and does not try to present any final elucidation of this problem, which is at the same time so simple and so difficult. It has become necessary, however, to make some attempt to distinguish between the psychology of the sexes, because for the purpose of simplication, Lectures V., VI., and VII. were almost exclusively devoted to the psychological development and emotional reactions of the male. We should be getting off too lightly if we attempted to leave it at that, and we must now try to see what particular deviations may be expected in the female, and to point out such psychological differences between the sexes as seem to be of importance.

It may seem strange that there is so much doubt and difficulty about the subject of psychological sexual differences, but some of the reasons will become more apparent as this lecture proceeds. It is not, however, in psychology alone that simple problems are often the most difficult to solve. There is the same difficulty to be found in general medicine, such as, for example, to find the cause and cure of everyday disorders like the common cold or chilblains. Such deficiencies as these in the otherwise imposing structure of our knowledge should help to keep us humble.

ANATOMICAL AND PHYSIOLOGICAL CONSIDERATIONS.

It is because the anatomical differences are so simple that the psychological ones appear to be so complex by contrast. Anatomically, the undifferentiated borderline between the two sexes is a matter of extreme rarity, although those cases in which unfortunate individuals have publicly to change their sex at puberty, prove the occasional existence of the true anatomical hermaphrodite. Even in such cases the literature does not appear to show any case of actual bisexual potency. Although both the male and female organs may be present in the same individual, they never both seem to be able to function. Anatomically then, except for rare cases of hermaphroditism, distinction between the male and the female is perfectly definite.

Developmentally, however, we see how the male and female organs are derived morphologically from a common origin. The testes are derived from the same embryonic tissue as the ovary, and the penis and clitoris correspond in origin, but not in function. Biologically it is known that the simplest type of organism possesses no sex differentiation, but reproduces itself by a simple process of fission. Only at a later stage of development does sexual differentiation take place, with fertilisation of one sex by the other. It would appear that this method arose in a later state of evolution, as a more effective way to safeguard the propagation of the species.

Behind the apparent anatomical contrast, we find the morphological correspondence. Anatomically, the difference is as simple as male, female, and hermaphrodite. Morphologically, both male and female are potentially bisexual. Psychologically, there would seem to be to some degree the same bisexual potentiality, a graduated scale of "maleness" and "femaleness," as if one sex is functional and dominant, at the expense of the more or less complete elimination of the characteristics of the other sex. It would seem, therefore, that the psychological problem is in reality a very difficult one, as in each individual of either sex there are varying components of "maleness" and "femaleness," dominant or in abeyance.

HISTORICAL CONSIDERATIONS.

It is an important part of our psychological theory to regard each individual as being the sum of certain racial experiences acquired by repetition over a long period of evolution. If this be granted, it is obvious that such differences in general experience as men and women must have had during the history of the race, will have added in some degree to their deeper psychological divergences. Biologically, the function of women has always been procreative, and their duty was to produce and care for the children. Men, on the other hand, were the fighters and fenders for the family. The functions, experiences, and emotional reactions of men and women must therefore have always been very different. The men went out hunting, met with various adventures and had to solve innumerable problems of transport, battle, and food-supply. This probably encouraged the development both of the aggressive and rational elements in their nature. These were required for the tasks which were part of their everyday lives. Women, on the other hand, developed different characteristics more suited to their different function. There was less need to be aggressive, because their duties were maternal and domestic. They did not have to kill the animal, but to cook it. They did not have to fight, but to feed and protect their young. Women, therefore, would tend to develop a more passive and emotional, and less rational, attitude towards life. Their feelings would be more tender and their hearts more soft.

When it came to comparative judgment as to the relative importance of the two sexes, there is no doubt as to who were the judges and, we may therefore suspect, who were judged superior. In battle and in council it was the men of the tribe who mattered. The function of women was "only" child-bearing, and their position in the tribe was generally regarded as inferior. For how many centuries have women been *regarded* as inferior, and therefore *experienced a feeling of* inferiority? Whereas the tender emotional quality of women may be a primary psychological characteristic, associated with their biological function of child-bearing, it is suggested that this *feeling of inferiority* may have been acquired from the source of historical repetition. If this is so, we may expect to find *inferiority feeling as the dominant factor in the psychopathology of women.*

It is only in comparatively recent years that the status of women has been raised above that of the primitive tribal child-bearing level. In parts of the world at the present day women are still regarded as being of less value than cattle. It is a matter for congratulation that civilisation, having at last partly discovered women, has now added to that first progressive step the discovery of children. But the fact remains that however much the last few generations of women may have been raised as to their social status above their forbears, they seem still to have an inborn feeling of inferiority which remains an important characteristic in their psychology, quite independent of the fact that there is at present less justification for it. The unwillingness on the part of men to afford women the privileges of an equal social and professional status is probably due to the same historical cause. In spite of their improved status women are still meeting with more than a little resistance from the male sex, and it seems as if the influence of the past still demands that men should keep them in a state of subjection.

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* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Earlier lectures of the series have appeared weekly in THE LANCET since Jan. 3rd.

While we are considering the effects of historical repetition on the production of inborn feeling tendencies, it is probably necessary to review the psychological effect upon both sexes of the customary relative positions in the act of coitus. The aggressive dominance of the male is temporarily at least in a position of complete superiority, whereas the woman is in a position of inferiority. It has been pointed out already how our unconscious feelings and values are determined by such simple factors as years and stature. The position in coitus is such another simple factor which, through age-long repetition, has probably had important psychological consequences. In such simple ways are our present values dependent upon past experience. *But they are not, therefore, by any means necessarily correct.*

Psychopathology and the "Normal."

Can we speak of the psychopatholgy of "normal" men and women? It depends what we mean by the word. Only if an individual is perfectly mature and developed will psychopathology be absent, and this is rarely if ever the case. Some degree of psychopathology is normal in all of us, and it is therefore correct to speak of the *normal psychopathology* of the sexes.

It would seem that the psychopathology of men is simpler than is the case with women, in whom mechanisms and complexes are less obvious. Analysis of women is usually found to be more difficult to understand clearly and in detail. And yet from another point of view their psychology seems simpler, because it is more fundamentally instinctive and emotional, and less obscured by rational complications. Perhaps we may say that women are partly modified men, but we must also allow them to some extent an independent nature of their own. They have always been associated with sphinx-like impenetrability, and psychologists also find themselves faced by the same figure of veiled mystery. However, psychologists can have little respect for veils, and must do their best to see what lies behind them.

If the fundamental psychopathology of women is *inferiority*, what unconscious affect may we expect to find occupying the same position in the case of men?

INDIVIDUAL EMOTIONAL DIFFERENCES.

Let us start at the beginning. The infant's first desire is for food, and the source of gratification is the maternal breast. (The breast has been so often repeated as a racial experience that the introduction of the comparatively modern feeding-bottle seems to have made no difference. To the infant mind it is taken as if it were breast.) The infant, whether boy or girl, is "thrown into the arms" of a woman, if we are allowed to speak a little metaphorically, and there the primary desire of hunger is satisfied under conditions of peculiar emotional significance. But for the boy there is a difference of *sexual polarity*, which is absent in the case of the girl. There is no need for us to suppose that he is conscious of any difference, but this is beside the point, since we are dealing with the reaction and development of inborn feeling states. The boy experiences this primary emotional intimacy and gratification under circumstances which are radically different for the girl, because of the absence of the heterosexual factor. The latter is never thrown into quite the same emotional intimacy with her father, experience of whom is deferred until later, when many other impressions have been absorbed. From this we may deduce that the Œdipus complex will be simpler, deeper, and more frequent in its effects in the male than the corresponding Electra complex in the female. This statement is confirmed by clinical experience.

But the primary affect of the Œdipus complex is guilt, especially associated with sexual stimuli. This then would seem to be our starting-point in male and female psychological divergence—*the primary emotional intimacy of the male with the mother induces a stronger defensive affect of guilt towards sex than is the case with the female.*

These affects of guilt in the male, and inferiority in the female, are normal, in so far as they are subjectively and generally present to a greater or less degree as the results of past racial experience. But, like other normal psychopathology, they require to be outgrown before objective reality can be appreciated at its true value. We may state the following axiom: "Although a feeling tendency, such as sex guilt, may be universally distributed, it is not therefore necessarily true." The unconsciously defensive attitude towards guilt is only associated with the earlier stages of sexual development, not with its maturity. In so far as it is universal, it is an example of a general psychopathology, and indicates a general "fixation," or incompleteness of sexual development. It is part of the function of growth to remove this initial defensive and unconscious guilt-feeling from sex, which is apparently particularly deeply rooted in the male sex.

But we seem to be on dangerous ground. Do we wish to eliminate guilt altogether, or can we analyse it and distinguish two different kinds, one bad and one good? Perhaps a consideration of "morals" will help to clear up the problem.

There are two kinds of morals: (*a*) defensive and unconscious, (*b*) selective and æsthetic. The former are those which are associated with primary unconscious guilt, and their function is protective against a desire which is felt to be wrong, and the consequence of which is a punishment to be feared. The latter are not motivated by fear, but by desire. They are on a higher plane, consciously selective, emotionally æsthetic, and are compounded of desire, caution, consideration for others, and a mature wisdom of outlook. To infringe the unconscious code, which is akin to taboo, is to invoke unconscious guilt and fear of punishment. To infringe the other code is to experience a quite different and psychologically desirable feeling of moral or æsthetic disapproval.

If we generalise at this point we must do so tentatively and cautiously, or men will all be found in the group of morals of the defensive and unconscious kind, and women presumably in the other. That would be quite untrue because it would go too far. All we can suggest is that men are more prone to react to sex with a feeling of pathological guilt, and a defensive unconscious moral code, than are women. For this statement we have some confirmation in the fact that women are generally regarded as being more "amoral" than men, and at the same time simpler and more free in sexual matters. But immediately a doubt comes into our minds—"That is not true, either for all men or all women, although it may be true for some. What about the others?"

We can only pick out certain general tendencies, and examine them for what they are worth. If they are there we can expect the consequences—but not in every individual nor all the time. There are so many other factors which have their own consequences which complicate the picture, and of those one or two will now be mentioned, which go some way to account for the exceptions to those principles which have already been suggested.

The assertiveness, "superiority," comparative independence, and ready "over-compensation" of the normal male help him to cast off the fetters of his early emotional fixation, whereas the female is more prone to accept the moral code to which she is accustomed, as she has not the same aggressive attitude towards life. The male is by nature more inclined to adventure and rebellion, but his guilt code affects his attitude towards women, if in no other way than by his trying to pass it over to them. If women are brought up to the belief that sex is guilty, they are more liable to believe it than are men. It is the guilt sense in man which tends both to idealise and to desexualise women, at the same time contributing to that social conspiracy which has in the past attempted to deny women the right either to sexual knowledge or sexual feelings. When a girl develops an Electra complex all society and conventions help to fix it upon her. But when a boy develops an Œdipus complex there is much more "over-compensation" to help him to lose it. Hence, when it occurs, the Electra complex and its sexual repression is liable to be very severe. We may summarise by saying that over-compensation is a help for men to solve their problems of unconscious sexual guilt after a fashion, but it is obtained at the expense of projecting that guilt on to women.

The subject of masturbation is also important in the influence which it brings to bear on guilt psychology. Being much more frequent in the boy than in the girl, the guilt with which it is associated is very liable to become transferred to all subsequent sexual experience. There are many men who regard sex intercourse in marriage with much the same guilt feeling as masturbation, as something sensually desirable but morally improper, to be got over as soon as possible without a corresponding sensual gratification being permitted to the woman. The result of this attitude is disastrous, and is responsible for much unhappiness and subsequent ill-health, especially for the woman.

DEFENSIVE REACTIONS.

For the man there are, therefore, three different kinds of defensive reactions for his guilt feelings. The first is *morals*, of a defensive and unconscious kind, which tend to a certain degree of sexual clumsiness, priggishness, and ignorance of the elements of mutual sexual hygiene. The second is *over-compensation*, which shows itself in various ways as a bold bid for sexual freedom and adventure, but does not usually overcome the underlying tendencies of unconscious motives. The third is the *idealisation* and *desexualisation* of women—a refusal to see them as they really are, a preference for an exalted and sphinx-like inscrutability in women, and a general attitude of sentimental unreality between the sexes. It is for these reasons that women must be kept "innocent" of sexual facts and of the "seamy side" of life—as if knowledge of the elementary facts of life would harm them.

In the same way the unconscious defensive mechanisms in women must protect them from feelings of inferiority. It is perhaps for this reason that women need to be constantly praised, to be told repeatedly of their charm, the beauty of their clothes, and their superiority over others. There is a fundamental Narcissism in women which is lacking in men, and which men cannot afford to neglect. Women like to be admired quite as much as they like to admire themselves, and clothes carry the transferred affect from their bodies. They want to feel admired, loved, superior, and it is not enough for them that the appreciative male should be silently aware of their charm. It is because of her inferiority, perhaps, that a woman wants to be told that she is superior to all others—and told again.

When inferiority feeling is not assuaged, the results are those familiar examples of defensive mechanisms, jealousy, cattiness, nagging, and scandal-mongering, the underlying motives of all of which are relative disparagement of someone else, whether rival, no one in particular, mother-in-law, or husband. Of how much unhappiness on all sides are such uncorrected inferiority feelings and defensive mechanisms the cause! Whether the unconscious punitive and retaliatory dynamism is directed towards cattiness, nagging, or intensive propaganda, it is both a waste of good energy and a source of progressive and widespread unhappiness.

In confirmation of the preceding remarks, the following quotations have been taken from the autobiography of Sir Ellis Hume-Williams, who was for 40 years a divorce court barrister ("The World, the House, and the Bar," p. 260 et seq.).

> "I think, strange as it may seem, women are less faithful than men. The risk of an illicit liaison is sometimes better to a woman than the sameness of uneventful domesticity. There are happy, if usually selfish bachelors. But the average woman cannot live a life of even moderate happiness without love, affection, and attention. It is the food of her soul, and without it her spiritual being droops and withers, just as her body would without nourishment. If her husband does not or cannot realise what affection means to a woman, and does not both possess it and show it, he is not entitled to be surprised if she takes a lover.
>
> "Men are, it is true, more subject to a 'sex urge,' but the visitation is generally transient and a tactful woman can usually deal with it. Also, while no man has really understood a woman, the average man is the easiest thing in the world to understand and manage by any woman who thinks it worth her while.
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> "Matrimonial differences generally begin by the man being too content at having secured his woman, too content to continue the little attentions with which he has wooed her. There are still men in existence who look on a wife once won as a sort of possession with which they can do what they please. The thing which keeps together many a couple who might be happier apart is the love of the woman for her children—a love which, as a rule, moves a woman more deeply than a man."

WHAT MEN WISH WOMEN TO BE.

The reason why the subject of sexual differences has remained for so long in the dark is perhaps because the men and women who have written about it *did not know what they wanted to find.* Before we are able to see anything correctly as it really is, it is necessary first to find out what it is that we want to see because, unless we do, we shall probably only see what we want to see and so deceive ourselves. We must first of all take the mirror of wish-fulfilment from in front of our eyes. What do we want to see? The truth may be the same as that, but on the other hand, it may not.

In the previous lecture it was suggested that there was a very strong reason for men wishing to idealise, sentimentalise, and desexualise women. Men want women to be maternal, super-human, and possessed of immaculate purity, and therefore they wish to protect them from any tarnishing touch of reality. Such women would, of course, have no sexual feelings, which would be the height of purity and propriety. They would have no knowledge of sexual facts, and must be kept sublimely innocent of what goes on behind their backs.

So much for one side of the psychopathology of what men want from women. The other side completes the picture. They want sexual satisfaction, male superiority, and completeness of possession. Sometimes they also want somebody to punish and despise, from a motive of retaliation. It is easy to realise that a great deal of what has been written about women falls under one of these three headings: they are either sentimentally idealised, voluptuously over-sexualised, or generally despised. But women are not, in fact, any one of these three. They gain nothing of moral stature or æsthetic beauty by being idealised into benevolent mother phantasies and impossible prudes. Their sexual attractions require neither to be sentimentalised nor despised. Much of what is called "the veil of the impenetrable Sphinx" is due to these errors of phantasy which men have projected on to women in the chosen blindness of their wish-fulfilment. Behind it all there is the real figure of the woman—independent, maternal, coöperative, sexual, and above all, human. If men continue to think that women are only such as they wish them to be, they must always be wrong and women must remain impenetrable riddles. But it is not true. A woman's sexual feelings are quite as intense and quite as worthy of fulfilment as are a man's. A woman's function is different, but to be valued quite as highly. Women are, in fact, just that indivisible unity of the "sacred" and the "profane," but only phantasy can take the one and ignore the other. Therein lies their humanity, their living character, and at least part of their charm.

WHAT MEN WISH THEMSELVES TO BE.

While we are considering what men wish women to be, it will perhaps be useful at the same time to discover what men wish themselves to be. Again there is the tendency to divide themselves into two very different characters: one, the prig, the other the omnipotent and omniscient cave man. By doing so, they effectively disguise from themselves any feeling either of guilt or of inferiority which may be unconsciously causing them anxiety. But again, seeing themselves as the image of their wish, they are blind to themselves as they really are.

WHAT WOMEN WISH MEN TO BE.

Sex is for men a subsidiary function, but not so for women It is too intimately associated with their primary function, maternity. For men, sex is only a part of life, but in that part it is an *end in itself.* For women it is *a means to the greater end of maternity,* which is the function for which they are biologically and psychologically intended and without which their lives must always remain, to some extent, incomplete. Women are probably less inclined to idealise men. They regard the successful exercise of man's sexual function with more simplicity, both as an end in itself and as a means to a greater end. Women have not the same reason to be wrong in their judgment of men, as men have in their judgment of women. In spite of the conventional platitudes of society and men in general, women do not require much experience of men in order to see them as they really are. It is true that they may also tend to idealise and hero-worship, but provided they are not made to feel inferior and unattractive they are willing to tolerate men's multiple deficiencies.

WHAT WOMEN WISH THEMSELVES TO BE.

What do women want to feel about themselves? Again they seem to be more satisfied with reality than men are, and their goal is primarily a simple one. It is not for nothing that woman's interest in clothes and jewels is greater than that of men. All women wish to look nice, to be at their best and most attractive in appearance. It is not only that they are more "Narcissan" than men, but their attractiveness is also the chief means to the desired end of their biological function—namely, maternity. It does not matter if maternity has been achieved or is unattainable, the need to look and feel and be acclaimed attractive remains dominant in female psychology. Whatever may be the standards of present-day civilisation and culture, the desire to be attractive is an inevitable hereditary contribution from woman's past.

Aggression and Submission—Sadism and Masochism.

There are two psychological characteristics which we seem to be able to apply respectively to men and women—namely, aggression and submission. The male is characteristically the aggressive type, the female the submissive. This distinction may have been determined, at any rate partly, through historical repetition, the quality of aggression being necessary to the hunter, whereas submission is more necessary for the woman at home. But aggressiveness and submissiveness are not necessarily the qualities by which superiority and inferiority are to be judged. They are perhaps more to be regarded as modes of feeling associated with different functions. However this may be, these characteristics seem to apply to the typical male and female. There are, of course, many aggressive women and submissive men, but it has already been stated that psychology and anatomy do not always correspond. From the psychological point of view the aggressive woman is a male woman, and the submissive man is a female man.

Although not by any means identical, it is useful to link sadism and masochism with aggression and submission. In sadism we have a typically masculine reaction, which tends to associate sexual feeling with super-domination and a certain pleasure in the infliction of pain. In masochism, on the other hand, sexual gratification is associated with a feeling of being overpowered and the pleasure of pain inflicted. There are many difficulties, however, in understanding the psychopathology of sadism and masochism, and it is best to admit that we do not know by any means all about these two very fundamental and primitive feelings. It is quite true to say that sadism is to some extent a normal component of masculine, and masochism of feminine, sexuality. The two, however, so frequently occur in one individual that they may be as intimately linked as the two sides of a penny. The sadist is frequently also the masochist, and the masochist the sadist.

Sadism and masochism vary in degree from the normal to the severely pathological.

> A boy of 14 was able for two years to behave like a young Rasputin, and to completely terrorise the younger boys of his house at school. He would make appointments to thrash a certain boy every Wednesday afternoon during the term at 3 o'clock in a certain spinney; another would be told that he was to forfeit every breakfast egg; another that he was to contribute 2*s.* 6*d.* a week of his pocket money; and another that he required a pocket knife which, though it was broken and useless, would cost him 4*s.* 6*d.*, and if he had not got the money he would need to borrow it or be thrashed. He possessed such awe-inspiring qualities that no one for two years dared to disobey his orders or report him to the authorities. He had no other sex life than these sadistic thrashings, which were accompanied by sexual orgasms.

A patient with a less pathological degree of masochism made the following remarks:—

> "When I was playing bridge the other night, I held ten hearts to the ace, king, queen, but I let myself be called out by my partner. I would always much rather someone got the better of me, especially if I were quite sure I was in the right."

It is not everyone who is so fortunate in being able to evade responsibility, whilst retaining both a sense of power and of unjust grievance. Masochism to a more extreme degree is found in those cases which delight in inflicting punishment upon themselves, sometimes by binding themselves with cords, or being beaten, and is again associated with sexual pleasure. A perusal of the daily papers, other than those of the highest repute, shows the extent to which the general mass of readers like suggestive, sadistic sensationalism served at the breakfast table. In the Sunday press of the same type this tendency is even more evident. This interesting example occurred in a Sunday paper when this article was being written:—

> "A strange form of hero-worship has taken hold of the young women of Czecho-Slovakia. Hundreds of them have fallen in love with a newly appointed hangman. Physically he is a fine specimen of manhood. He was appointed hangman only a few weeks ago. On the day following the execution huge crowds, consisting mostly of young girls and women, besieged the inn where he was staying. After carrying out his first execution he received more than 6000 offers of marriage in letters."

One of the after-effects of the sadism of the war seems to have been the liberation of the craving for sensationalism, which has been given free vent of recent years in detective novels and cinema melodramas.

Before we try to understand the source and value of sadism and masochism, it is useful to realise the extent to which *every intense emotion tends to arouse sexual feeling*. The scenes of Armistice night were, perhaps, typical of the sexual excitement associated with the intense feeling of emotional relief after the strain of the war years. Intense religious feeling may also very easily find a sexual channel of expression, and to this association is due, on the one hand, the exploits of a Rasputin, and on the other the emotional difficulties of the religious-minded spinster. It is also sometimes stated that a woman in the intensity of her grief at the loss of her husband is liable to fall to the seductions of another wooer. Any intense experience of beauty, whether visual or auditory, may have the same effect. In general, therefore, it would appear that emotional intensity of any kind tends to express itself through the sexual channel.

It has been suggested that the origin of sadism and masochism is to be found in the feelings of the infant towards the maternal breast. The pummelling and thwarted desire of the feeding infant when the breast is removed is certainly suggestive of the sadistic attitude, whereas the satisfied and submissive relaxation when desire is fulfilled at the end of a meal is again suggestive of masochism. To what extent this can be regarded as the sole source of sadism and masochism it is difficult to say. In sadism there is also the punitive and retaliatory tendency, which derives pleasure from inflicting pain and punishment. Sadism may, therefore, be an infantile reaction towards deprivation. Masochism, on the other hand, as a form of self-punishment, may be related to the need for a defensive self-punitive reaction against guilt. Whatever may be their psychopathology, we must regard both sadism and masochism as wish-fulfilment at an infantile level of emotional satisfaction, and they require raising to a higher sublimation before they can be considered as typical respectively of male and female psychology.

Thinking and Intuition.

Sir Ellis Hume-Williams was quoted as saying that "No man has ever really understood a woman," and this is frequently a cause of man's complaint. In spite of the fact that unconsciously they are themselves largely responsible for their own ignorance, men feel that they ought to be able to understand a woman and they are annoyed when she will not fit into any one of their logical watertight compartments. When a man is annoyed with a woman, one of his strongest criticisms of the female sex in general is that they are all "unreasonable," and therefore, by his reasoned and logical system, so much inferior to himself. Men regard their reason as something undubitably superior and are liable to be extremely annoyed when a woman arrives at her judgment with miraculous ease and swiftness, while he is left reasonably behind, still anxiously weighing the pros and cons. He is sometimes inclined to ascribe the woman's method to nothing higher than emotional prejudice, without any basis in logical fact. However, it frequently happens that the woman's rapid intuition, which has leapt at a single bound over all such difficulties as reason perceives, is quite as right in its conclusion as the slower method which may still, in spite of all its logic, be wrong in its ultimate judgment.

We are liable to over-value the rational function of consciousness, because it may be purposively defensive. Unconsciously, men are afraid of women, and thought and reason are a method of staying dangerous emotion. "Stop! Let me think!" is more than a plea for time. It is also a plea for safety, and when we are afraid, if we are not in a panic, we like to stop and think. Thinking may be a useful safeguarding process developed in self-defence against the incomprehensible ways of the fearful female.

Whereas men have needed to develop reason in order the better to do their work, women have needed something more rapid and more emotional to aid them in their domestic duties. This function is intuition, which men regard as inferior to reason, but it is very doubtful indeed if it is so. Reason is just as liable to be biased and led astray by emotion and wish-fulfilment, although intuition may leap at a judgment where reason lags behind to consider it. Reason can *prove* that it is right (even if it is not), but intuition is quite satisfied to *feel* that it is right. Reason will always suffer in an argument with intuition, in spite of the fact that it can prove every word it says. The complaint that women are "unreasonable" is, therefore, often a true one, but they are only unreasonable because they are essentially intuitive. This is not to say that they are necessarily inferior in their capacity for sound judgment.

Science is a most reasonable and logical method, but it depends for its incidence and ground work upon a *working hypothesis*. The number of men who can create a working hypothesis is definitely limited, because to do so necessitates an intuitive grasp of the problem which is essentially beyond reason. A working hypothesis is a "probability," a brilliant guess, which reason then proceeds to test by observation and experiment. However, reason is by no means to be infallibly trusted, because it is itself liable to be prejudiced and disturbed by wish-fulfilment. Much that passes as scientific research is vitiated from the scientific standpoint because the "scientist" desires certain results, and finds little difficulty in proving what he wishes to prove. Even such hard "facts" as statistics are amenable to wish-fulfilment. Vaccinators and antivaccinators, whose motives do not lack unconscious wish-fulfilment, can, if presented with the same statistics, prove from them their own pet theories without much difficulty.

Reason is not in itself creative, it is only comparative. It collects and compares data and can thence deduce a formula. Reason is mathematically correct, and by its measure 2 and 2 will always make 4. Not so, however, with intuition. Intuition is essentially creative and by putting 2 and 2 together may make something quite different from 4, to the pronounced discomfort of Reason. But it is true to say that only in pure mathematics, and then not of the very modern kind, does 2 and 2 make 4. If 2 and 2 are other than mathematical symbols, their character and summation introduce a new factor which is more than the simple mathematical formula $2+2=4$. "The whole is more than the sum of the parts," and whereas mathematics may be true in reason it is not so true in intuition. Where reason is groping amongst the parts, intuition grasps the whole.

Intuition is a gift of genius and is a sign of the creative mind. To this extent it may be said to be superior to reason, which is a much more commonplace quality. Where reason is only comparative, intuition is summative and creative. It agrees, therefore, with the more creative aspect of the psychology of woman. Reason and intuition are not to be regarded as either superior or inferior, but only as two different modes of perception and judgment. They represent psychological developments of a different order, intuition being more suited to the feminine function and reason to the masculine.

It is probable that intuition has never been appreciated at its true value, because in self-defence the importance of reason has been exaggerated, and because of the hereditary pattern of the male wish for aggressive superiority. The distinction has never been studied from the point of view of difference in educational methods. In spite of the recent social and economic freedom of women, it is probably true to say that they have not yet been psychologically discovered for what they really are. They are at present allowed to compete with men on more or less equal terms in many professions and in the government of the country. But the feminine sex will not really be discovered until such differences as there may be between them and the masculine are recognised, and suitable opportunities allowed for their development. In their escape from the hereditary pattern of inferiority feeling, women are at present trying to be just like men. They never were and never will be. They were not designed to compete on an equal footing with men in commerce and the professions, but to develop those qualities which they possess along lines associated with their own particular goal. It is perhaps due to the fact that they are competing in a reasoned, commercialised, mechanised, and mathematical world that women as a whole lack what is called "originality." They must inevitably have unnecessary defects as a sex, while they are forced to compete in an environment which is unsuitable to the development of their innate qualities.

Sex Acceptance and Adaptation.

In Adler's "Individual Psychology" it is stated that woman's goal is to be a man. This is a natural tendency of feminine psychopathology, where many women are struggling to overcome their feeling of inferiority by competing with the male, but it is the *wrong* goal. However, it is common in clinical experience to find cases of women who have adopted this pseudo-masculine rôle, usually to their ultimate grief and psychological confusion. The following case, who had the "powder-puff" dream (Lecture III., "Teleological dreams") is typical of many.

CASE T.—Woman; unmarried; headmistress; age 49.

Complained of: Extreme depression. Outbursts of crying. Occasional suicidal thoughts. Lack of concentration. No interest in her work. Frequency of micturition.

Appearance: Shy, severe and dressed in a rather masculine version of feminine attire.

History: Shortly before her birth her parents had lost an elder son, which had caused them great grief. One of her earliest memories was of being told by her parents how bitterly they were disappointed that she was not a boy. This made a very deep impression on her and she made up her mind that she would be a son to her parents. (This was not, of course, to please them, but to gratify her own desire to be wanted.) To a very large extent she succeeded. Although her parents were poor, she struggled her way up by means of examinations and scholarships and through her ability she managed to pass top in nearly every examination that she took. She said she always felt she simply must be top in all her exams; only to pass would be as bad as failure. Of the money that she earned she sent some to help to support her parents in their old age, but she always felt that her parents did not appreciate her and that her efforts were wasted on them. She was always unhappy during her vacations, which she always spent at home out of a sense of duty, and she said she could not help despising her parents. She had no use for men, and her life was entirely devoted to her work as a schoolmistress. She was afraid of walking alone in the country and would never go out by herself after dark because, she said, she was afraid of some man taking advantage of her.

In spite of her success, her work lost all its interest for her. She had several difficult homosexual attachments to women, but felt that she was insulted and ignored by those who attracted her. She had always suffered from frequency of micturition, being in the habit of passing her water sometimes every half hour, which had made her duties very difficult to perform. It transpired that this was a substitute form of erotic gratification, which rapidly improved during analysis.

The reverse type of case, of the man who wants to be a woman, also occurs fairly frequently. This is often associated with masochistic impulses, such as the wish to be bound or punished by a woman. The following case was the man who had the feminine handshake described in Lecture III.

CASE U.—Man; aged 47; married.

Complained of: Sexual impotence, loss of interest, and a feeling of uselessness.

History: He was a child of whom much was expected by his parents. He was the youngest of several brothers and sisters, with whom he had always felt it very difficult to compete. As a small boy at school he remembered wishing he was a girl, because he felt that girls had a much easier time. He was very reserved, and said that aggressiveness seemed to have been left out of his nature. His object in being a girl was that it presented an opportunity for escape from the difficulties of a competitive and unsympathetic existence.

When he grew up he continued to adopt the passive and submissive rôle, but nevertheless got on very well in his business career. His sex life, however, was deficient, consisting largely of exhibitionistic phantasies. He took such opportunities as offered for showing himself in a state of semi-nakedness to domestic servants and others, from which he derived considerable satisfaction. Whilst in bed he imagined that he was a woman and derived pleasure from fondling his own body.

At the age of 44 he married, but was sexually impotent. This was, however, psychological and not physiological, because he was always able to produce orgasm by auto-stimulation in relation to his own phantasies.

In such cases as these it will be realised that we are dealing with individuals in whom the psychological sexual component contains much that is both male and female. It is necessary for such patients that they should be helped to employ and develop those characteristics which they possess. The man who is submissive and intuitive need not, at least in time of peace, feel himself to be handicapped thereby. There are so many occupations in which he can fight in safety with pen and ink, and in which his intuition will stand him in good stead, that he need have no regrets. There are also many opportunities for the sublimation of a woman's competitive and aggressive feelings. The lives of these sexually mixed individuals may be more difficult, but they need to seek sublimation rather than repression. It is repression and unconscious defence mechanisms that cause psychological disorders. For instance, part at least of the cause of *depression*, which is such a common symptom amongst our patients, is frustrated wish-fulfilment. A woman who tries to be a man, or a man who tries to be a woman, must inevitably be disappointed and depressed.

Marriage Problems.

Many problems in life are due to the fact that we think people are what we want them to be. We are then disappointed when they turn out to be what they really are, which is something quite different. This is the cause of a great many of the difficulties which arise during marriage, when the intimacy of domestic contact proves the difference between reality and wish-fulfilment.

Another aspect of the psychopathology of marriage is due to the way in which the unconscious chooses what it wishes, quite independent of consciousness and reason. It is an axiom in psychology that *the symptom of which the patient complains may be unconsciously desired and psychologically useful.* This axiom applies also to marriage, and the partner may sometimes be classified as one of the patient's unconsciously desired symptoms.

CASE U (*continued*).—This man, who wished to be a woman, chose and was chosen in marriage by a woman who wanted to be a man. She was of a dominant aggressive type, a very capable business woman who was accustomed to her word being regarded as law. His unconscious wish was to be mastered and hers to be masterful. These wishes were mutually satisfied, but they found life in matrimonial partnership on a conscious plane both difficult and disappointing, and the man therefore applied for psychological treatment.

The possibilities for such complicated couplings are innumerable. The dominant male with sexual repression may marry a "blue-stocking," and the man with gonad deficiency may attempt to overcompensate by marrying a full-blown chorus-girl, in either case with results that may be disastrous on both sides. Similarly, the girl of potentially strong character, but repressed by a stern and patriarchal father and therefore afraid of the man who might be her normal mate, may choose in marriage a perpetual invalid, whom she is warned can never give her children. So the unconscious of each may choose, and within its limits may choose well, but it is a hard, inexorable master with scant consideration for domestic comfort.

Conclusion.

It is apparently one of the principles of Communism that every Communist should be able to do, at different times, everyone else's job. It would seem as if modern civilisation were tending towards the same principle, by trying to eliminate sexual differences in so far as physiological limitations will permit. The fallacy is a very important one, because it ignores essential and unalterabe differences. The happiness of each one of us depends on the degree to which we are able to express our own individuality in coöperation with the expressed individualities of others. In each of us there are so many points of difference, however much we may seem to be the same. One man is psychologically suited for one task, another for a different one. It is a cruel injustice to expect a man possessed of a psychology which is essentially creative, to perform a task which is uncreative and repetitive. It is just as cruel to expect another, who would be perfectly happy in a position free from responsibility, to undertake work beyond his capacity. How much greater is the injustice which is entailed by failing to recognise those psychological differences which distinguish the male and the female! They are, at present, still largely undiscovered, and the result would seem to be much unnecessary social and matrimonial unhappiness, disorder, *and ill-health*, in which the woman is liable to suffer the greater hardship. Perhaps, unless psychology steps in first, the pendulum will swing over towards the development of a compensatory matriarchal system, in which the superiority of women will be assured.

In the beginning the organism was a bisexual unit, but since that time procreation and matrimonial unity have been achieved through the coming together of two sexually differentiated individuals. The ideal of unity must be maintained, but it must be a unity in which both the man and the woman are free and independent individuals, finding their complementary "better halves" in each other. This cannot be achieved, however, until the essential individuality of each is given full freedom for its expression and development, so that they may become finally united in procreation, self-expression, and mutual esteem.

THE SERVICES

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lts. J. Stephen and H. M. Petty to be Surg. Lt. Comdrs.

Proby. Surg. Lt. (D) H. P. Buchanan to be Surg. Lt. (D).

Proby. Surg. Sub-Lt. R. H. Berry to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. C. H. C. Byrne retires, receiving a gratuity.

Lt. J. H. Anderson to be Capt.

Lt. J. C. Gilroy is secd. for serv. under the Colonial Office.

Lt. (on prob.) J. M. Gibson, from the secd. list, is restd. to the estabt.

The undermentioned Lts. (on prob.) are confirmed in their rank: J. M. Gibson, W. A. Y. Knight, A. Guirdham, M. A. Rea, S. W. Smith, and J. M. Officer.

J. R. Tobin is granted a temp. commn. in the rank of Lt.

MILITIA.

Maj. C. V. Nicoll retires on attaining the age limit and retains the rank of Maj.

TERRITORIAL ARMY.

Lt. H. S. Davies resigns his commn.

ROYAL AIR FORCE.

Flying Officers G. W. Paton and P. J. McNally are promoted to the rank of Flight Lts.

SPECIAL ARTICLES

INSTITUTE FOR SURGICAL AND BIOLOGICAL RESEARCH.

MR. BUCKSTON BROWNE'S GIFT.

At a meeting of the Council of the Royal College of Surgeons of England on Feb. 12th the following letter from Mr. G. Buckston Browne, F.R.C.S., was read :—

80, Wimpole Street,
Cavendish Square, W. 1.
4th February, 1931.

To the President and Council of the Royal
College of Surgeons of England.

My Lord and Gentlemen,

I believe those who have added, or are adding, to the Science and Art of Surgery, to be the greatest of all benefactors to the human race, and to the domesticated animal kingdom. I therefore wish at the end of a long surgical life to do all I can to facilitate the labours of those willing to devote time to surgical observation and research.

I therefore ask you to grant me the great privilege of building and endowing an Institution of Surgical Biological Research in which surgeons, and particularly young surgeons, will have full opportunity for carrying out their investigations.

The institution I have in mind is in reality an extension of the scheme, which the Council has already established by the equipment of laboratories in direct connexion with the Great Museum of the College. I learn that the men now working in these laboratories are handicapped in their researches by the lack of a place where living animals can be studied. We all know that John Hunter had a farm at Earls Court, where from close observation of living animals, he was able to make his most important additions to surgical knowledge. It is such a farm that I wish the Royal College of Surgeons to accept from me.

I have lately acquired, established and endowed "Down House"; Darwin's home for forty years. I have handed over the house and land—some twenty-three acres—to the British Association for the Advancement of Science, to be preserved in perpetuity as a memorial. I have more recently bought an additional thirteen acres, actually adjoining the Darwin estate, and this land provides in my opinion an ideal site for a biological farm. This land I offer to the Royal College of Surgeons as a gift. It is just beyond the village of Downe (Farnborough, Kent), sixteen miles from Lincoln's Inn Fields, and can be reached in forty-five minutes. There is ample accommodation, and pasturage for animals, and its intimate association with Darwin should provide inspiration for those who desire to follow in the traditions of Hunter.

The size of building to be erected, its design and equipment, service and staff must await the reception extended by you to my proposal. In the meantime I would suggest a moderate beginning, just enough for present requirements. The needs of your laboratory workers should be met, and of those surgeons who are now seeking opportunities for testing inferences they have drawn concerning the nature of certain diseases from clinical observation. As further needs become evident, additions to the building can be made. At present I think the following provisions must be carried out.

1. To provide three or four laboratories where investigations can be made under the best conditions, or where living animals can be closely observed, and cared for.
2. Houses for animals.
3. Accommodation for the chief attendant—one skilled in laboratory methods.
4. Accommodation for a stockman to look after, and feed the animals.
5. Hostel accommodation for those working in the Institution, should they wish to carry on continuous work.

I understand that the detailed work of examining results will be carried out in the laboratories of the College in London, so that there will be no need to provide, and furnish, pathological laboratories at the Downe Institution.

In the preliminary stages at least the direction of the Institution should be entrusted to the Conservator of your Museum. He now spends his week ends, whenever possible, in a cottage on the Darwin estate, adjacent to the site proposed for the Institution.

I am prepared to give you £50,000, and I will add further sums from time to time until my gift, including the cost of the land, and such interest as may accrue from money lying in your hands, shall altogether amount to £100,000. If this sum be not reached before I die, I shall arrange that my estate makes good the balance due.

Believe me to be,
My Lord and Gentlemen,
Yours very faithfully,
(Signed) G. Buckston Browne.

The Council unanimously adopted the following resolution : "That the Council hereby express their deep sense of Mr. Buckston Browne's great liberality, and, on behalf of the College, undertake to be responsible for the proposed Institution for Surgical Biological Research, subject to the settlement, under a Deed of Trust, of conditions satisfactory to the Council and to Mr. Buckston Browne."

MEDICINE AND THE LAW.

Hospital Sweepstakes and Ballots.

The public is by this time aware that sweepstakes, even sweepstakes in aid of hospitals, are illegal in England because forbidden by the Lottery Acts. It is also aware that approved sweepstakes in aid of hospitals are temporarily legal in the Irish Free State by virtue of the Public Charitable Hospitals (Temporary Provisions) Act, 1930, passed in Dublin last June and remaining in force till July, 1934. The lawfulness of sweepstakes is thus a matter of geography. Two men were fined £25 apiece at Sheffield last week for selling tickets for one of the approved Free State sweepstakes. The Postmaster-General, presumably acting under Home Office warrant under Section 56 of the Post Office Act of 1908, intercepts letters addressed from England to Dublin by persons who want to take part in these Free State lotteries. It was stated officially in Parliament last year that 9000 letters were opened in connexion with the Free State sweepstake on the Manchester November handicap and nearly £7000 was returned to the senders. Clearly there are plenty of people in England who like their "flutter." A project to give them what they want by organising sweepstakes in the State of Andorra is said to have been vetoed by the high authorities of that country in the interests of morality. Another similar attempt is said to be in progress in the Free City of Danzig. Yet, though the public understands that what is lawful in Free States and Free Cities may not be lawful in England, it may still be puzzled. The London Stock Exchange has, to the great advantage of charities and without hindrance from the police, conducted a large "mutual subscription" for several years on the Derby; and at this very moment a "Radio Ballot" in aid of the voluntary hospitals, offering "a five-figure fortune for sixpence," is receiving full publicity in a London daily newspaper assisted by the British Broadcasting Corporation. Lord Lee's Commission on Police Powers used mild language when it reported that the provisions of the Gaming Acts as to lotteries and competitions for money prizes were exceedingly complicated and produced anomalous results. As the report pointed out, there is danger from the haphazard enforcement of laws which have not the whole-hearted support of public opinion.

In England, as is well known, the State used to conduct official lotteries until 1823, and many of the statutes against lotteries were passed to protect this form of State enterprise from private competitors. If it is declared to be the law that all sweepstakes are illegal in England, the statement may be qualified in two ways. In the first place, all laws are not always enforced. The law against Sunday entertainments has been very far from enforced, we know, by the London County Council in the matter of cinema theatres. Nearly a year ago the Home Secretary explained to the House of Commons that he drew a distinction between sweepstakes that were private and those that were not private; the Stock Exchange sweepstake, he understood, was a strictly private affair confined to members; if so, he would not initiate action against it. In the second place, it may be possible to keep a lottery on the right side of the law by diluting the element of chance with an element of skill or judgment. Legally defined, a lottery is a distribution of prizes by lot or chance; but the distribution must be entirely by chance; if skill or judgment enters into the scheme, a competition will not be a lottery merely because chance also plays a part in it. Ever since the days of the "missing word" competitions the law-courts have been deciding the fate of particular instances. A prize for correctly predicting the number of births and deaths in a given area and period was obviously not a lottery. A prize for guessing the winners of horse-races was also held lawful. The "last line" and "limerick" competitions were held to be lotteries in 1908 when it was not clear that the prize was awarded on merit rather than according to fancy or some other temporary method of selection. But where the competitors are asked to arrange a number of items in an order selected upon a particular basis requiring the application of skill and judgment, then the competition may be redeemed from illegality. The winner may have made his or her selection at random and without the slightest thought; the organisers of the competition are likely to be safe. The excellence of the motive—for instance, the assistance of the voluntary hospitals—is legally immaterial, though it might affect the zeal of the police in prosecuting or the sternness of the magistrate in passing sentence.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

DICHOTOMY.

OUR consciences are pricking us. Perhaps they are more sensitive than they were. Or is it that the evil of dichotomy has of late assumed alarming proportions? At all events, this hardy perennial has been much in evidence of late, and the publicity it enjoys, or suffers, may perhaps lead to a more rational system of dealing with it. In a lecture at Bordeaux by Prof. P. Mauriac, whose audience was exclusively medical, the whole subject was ventilated with much candour. To show how old the problem is, the lecturer read a letter written in 1752 by a Dr. Gilbert of Montpellier, who deplored the greed and lack of scruples of certain doctors in this respect. Prof. Mauriac rather thought that in 1930 this evil was even greater. As for the predisposing causes, he was inclined to blame the overcrowding in the medical profession which has reached such a pitch that the doctor who is honest cannot always make a living from his profession. Hence the recommendation that the authorities should take the necessary measures to combat the overcrowding among doctors, the evil effects of which ought not to be borne by the patient. Such exhortations to the authorities are apt to fall on deaf ears or to be misunderstood by suspicious souls tempted to find in claims for limitation of the number of doctors a craving on their part for a sort of monopoly. Prof. Mauriac presented a questionaire, the first query of which ran: "Are you in favour of sharing fees?" He asked the following supplementary questions: "Are you in favour of dichotomy between physicians and surgeons alone, or also between them and specialists and laboratory workers, &c? Would you make it conditional on the presence of the physician at the operation? In what proportions should the fees be shares? Should the patient's family know the exact terms of the dichotomy, or only the fact of its existence?" As Prof. Mauriac pointed out there might be cases in which a commission of 5 per cent. was immoral, and others in which a commission of 50 per cent. might be legitimate. At all events the patient or his family ought to know where their money goes. If the general rule were to be adopted that no operation was to be decided on without the coöperation of the physician in charge, and that he was to attend at the operation, his claim to participate in the operation fees would be justified. The comprehensive fee then charged to the patient could legitimately include both that of the surgeon and that of the physician.

THIRTY-YEAR JUBILEE OF THE PASTEUR HOSPITAL.

Dr. Louis Martin of the Pasteur Institute recently gave an address in connexion with the thirtieth birthday of the hospital attached to the Pasteur Institute. It was built in order to provide in-patient treatment for cases of diphtheria. This qualification for admission was soon extended to all infectious diseases. Babies, children, and adults are all eligible for admission to the one-bed isolation wards, whose glass walls prevent their occupants from feeling completely cut off from the outer world. During its first 30 years this hospital has received 2516 patients suffering from diphtheria (mortality 6·95 per cent.). There were 2955 cases of non-diphtheritic sore-throat, 2902 cases of measles, 4810 cases of scarlatina (mortality 2·16 per cent.), 488 cases of typhoid fever (mortality 2·86 per cent.), and 550 cases of small-pox (mortality 18 per cent.). Dr. Martin insisted that the comparatively low mortality-rates of the Pasteur Hospital should be traced to the rigorous application of individual isolation, infection within the hospital being exceedingly rare. Even when the staff of the hospital was included in the comparison, the intramural infections were much less frequent than in other fever hospitals.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

CRITICAL POSITION OF SICKNESS INSURANCE.

THE adverse financial conditions prevailing all over Hungary are reflected in every institution dependent on public support. Workmen's insurance has been in serious difficulties for some months, and though the State agreed to cover all its liabilities up to the end of last year, none can foretell what will happen in 1931. It is quite certain that the deficit will be still higher, for the number of employers unable to pay the premiums is going to increase. On the other hand, the raising of the premiums in order to meet the deficits is at present impracticable. The Board of Directors can think of no solution save to reduce costs of administration, first by dismissing some of the officials, and secondly by reducing the services offered to members. They argue that it is much better for employees to get a moderate supply of medical service, drugs, and sickness benefit, than to upset the equilibrium of the whole system. Another solution would be for the State to raise its contributions. But this borders on impossibility, for its revenues are steadily decreasing.

HORSE-FLESH IN HUNGARY.

A municipal horse-flesh works was established by the city of Budapest in 1905 with the object of securing cheap meat and sausages for the indigent population of the capital. The works has its own slaughter-house, equipped in the most modern way, its sausage factory and huge refrigerating plant, and also an installation for tinning horse-flesh. When the scheme was launched—at a time of general prosperity in Hungary—three shops were opened in the capital to sell the produce, but owing to the small demand two of these soon had to be closed. After the war the economic condition of mutilated Hungary became ever worse, and it was consequently necessary to increase the number of horse-flesh shops, so that at present there are several in every district of Budapest, the total number being 34. In 1906, the first complete business year, 3297 horses were slaughtered; in 1930 more than 10,000 horses have been consumed by the poor population of the city. Whereas 1 kilogramme of beef costs 1½ pengö (1*s.* 2*d.*), the same amount of horse-flesh costs 70–80 fillérs (about 6*d.* or 7*d.*).

LAWSUITS AGAINST SURGEONS.

Of late it has become the fashion in Budapest to call surgeons to account for unsuccessful operations. The amounts claimed are often exceedingly large, and the motives of the litigants—who do not spare even the most eminent professors—are only too obvious. The economic depression in this country leads unscrupulous people to make money in any way they can, and matters have not been made any easier by the behaviour of one or two pusillanimous doctors who have settled unfair claims out of court rather than face publicity. Their action, although disastrous, is not perhaps to be wondered at when we consider the damage done to a practitioner by proceedings against him in the law courts, even if he wins.

The epidemic character of this litigation is best shown by the fact that in the last few months not less than 15 law suits have been launched against prominent members of the medical profession. The plaintiffs, in most cases, sue the doctors on poor right—that is to say, they pay no legal costs. Prof. Arnold Winternitz was sued by one Sigmond Weiss, a canvasser, for performing an operation on his wife which did not have the expected result. The patient had presented herself at St. John's Hospital complaining of epileptic fits, and was duly examined by Prof. A. Sarbó, who thought they were caused by depressio cranii, which might perhaps be healed by an operation. The patient agreed to the operation, but after it was performed her fits continued and she was bedridden for a long time. For this incapacity, and for what she called the superfluous discomfort and pain of the operation, she claimed monetary compensation. Prof. Winternitz contended at the trial that the operation offered her the only hope of recovery, and claimed that her condition had, in fact, improved considerably. The verdict has not yet been given.

In another case the daughter of a postal clerk was treated at St. Rochus Hospital for secondary syphilis. On her discharge she sued the city of Budapest for a considerable sum as an indemnity for having a rash on her body in consequence of the treatment employed. The rash, she said, would reduce her chance of marrying. At the hearing the incriminated doctor, having been absolved from the obligation of professional secrecy, asserted that the plaintiff suffered from severe secondary syphilis, which necessitated administration of a large quantity of 914. The course was started cautiously with small doses, but salvarsan dermatitis nevertheless developed—a complication which is unforeseen and cannot be prevented. The legal representative for the city of Budapest put the question: which is more detrimental to the chance of marriage, a slight dermatitis which may ultimately heal, or syphilis which left untreated for several months becomes so severe that its complete cure requires at least a couple of years?

As I have said already, the sums claimed in these law suits are usually very large, and not only a lump sum but also monthly payments are claimed. This is very inconvenient to the city of Budapest, for the legal costs are established by the court according to the substance of the suit, which in these cases runs very high owing to the annual payments claimed in some cases for life. As the High Court of Justice decided against the plaintiffs in similar cases aimed against the State Sickness Insurance office, it is quite certain that the present law suits also will be lost. But as the plaintiffs litigate as paupers, the costs fall on the city of Budapest.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

BOVINE TUBERCULOSIS.

ON the advice of a special committee certain recommendations on bovine tuberculosis were adopted last week at the annual meeting of the Veterinary Medical Association of Ireland. The committee advised that tuberculosis in cattle was so widespread that wholesale eradication could not at the moment be expected. Nevertheless, steps could be taken immediately which would steadily diminish the incidence of the disease, and lead ultimately to complete eradication. These were:—

1. Widening of the scope of the Bovine Tuberculosis Order of 1926, in order to ensure the early detection and removal of as many clinical cases as possible, the Order to include the following provisions: (*a*) the removal of all cases excreting tubercle bacilli; (*b*) periodical veterinary inspection of all dairy cows; (*c*) the use of the biological test for mixed milk, so far as that is practicable, and for the purpose of supplementing the work of veterinary inspection.

2. Effective pasteurisation or sterilisation of separated milk at creameries before it is returned to farmers for feeding to calves and pigs. In this way the incidence of the disease in pigs, and probably in calves, might be reduced.

3. Education of the farmer and general public to obtain their coöperation and support in any scheme of eradication. The public must be made to recognise the necessity for demanding tubercle-free milk and meat. It must be demonstrated to the farmer that it is to his advantage to have the disease eradicated, and this can best be done by the official grading of milk.

4. Legislation to give effect to the recommendations of the Inter-Departmental Committee. The recommendations include the "grading of milk," the "accredited herd system," and the "area eradication system."

Legislation dealing with bovine tuberculosis and the milk-supply was outlined by the Minister for

Local Government and Public Health several months ago, but has not yet been pressed forward. It is to be hoped that the action of the Veterinary Medical Association may act as a stimulus to the Government.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

The annual dinner of the President and Fellows was held in the hall of the College last week, with Mr. R. Atkinson Stoney, the President, presiding. The company numbered over 120, including Mr. James McNeill, Governor-General of the Free State. The President, proposing the toast of "The Governor General and Prosperity to Ireland," referred to the steady prosperity of the College, and its increasing number of students. He spoke of the importance of the activities of the students themselves in their several clubs and societies, and stated that it was the wish of the authorities of the College to encourage such activities. An Officers' Training Corps was soon to be started. He further referred to the hospitals sweepstakes, and prophesied that their success would greatly increase the power for good of the hospitals. The Governor-General, in his reply, also alluded to the sweepstakes, and expressed the hope that those hospitals which benefited thereby would secure more and better work, while those hospitals which declined to take advantage of the sweepstakes should not be allowed to suffer by loss of subscriptions. The possibilities of sweepstakes should not alone govern the attitude of the public toward hospitals. He referred to the steadily increasing prosperity of the Irish Free State, slowed down, perhaps, but not stopped by the world-wide economic stress. Other speakers were the Vice-President of the College (Mr. F. C. Crawley), the Minister for Justice (Mr. FitzGerald Kenney), the Provost of Trinity College (Dr. E. J. Gwynn), and the President of the Royal College of Physicians of Ireland (Dr. T. G. Moorhead).

Dr. Geoffrey Bewley has been appointed to the chair of preventive and forensic medicine in the schools of the Royal College of Surgeons in Ireland. Dr. Bewley is one of the Physicians to the Adelaide Hospital, and had the distinction, seven years ago, of being the only man to hold at the same time the Fellowship of the two Royal Colleges of Ireland, for up almost to the time of his admission as a Fellow of the Royal College of Physicians of Ireland, that College refused admission to any Fellow of any College of Surgeons so long as he held such Fellowship.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

SCOTTISH HOSPITAL POLICY.

THE managers of the Glasgow Royal Infirmary have begun the erection at Canniesburn of an auxiliary hospital, the funds in hand amounting to nearly £100,000. Dr. Parlane Kinloch, chief medical officer of the Department of Health for Scotland, says that the scheme well illustrates the Scottish application of modern ideas in hospital development. In the first place the whole weight of informed opinion is being compelled towards a regional development. This envisages our teaching hospitals in the four university cities of Scotland as great casualty-clearing stations and hospitals for emergency surgery and medicine. They will serve and supply a whole ring of modern hospitals in the environs of these cities so that the vital requirements of modern medicine—fresh air, sunshine, and open-air treatment—will be available to the fullest extent. In the second place the plans of the Canniesburn hospital not only meet the fundamental requirements of Scottish hospital architecture, but incorporate a whole range of new devices for administration and service. Whereas European hospital design is of the "horizontal" type, with a maximum provision of verandah accommodation for sunlight and fresh air, the typical American "vertical" design was evolved to counteract extremes of climate by means of artificial ventilation, and to allow the highest degree of mechanisation so as to reduce labour costs to a minimum. The International Hospital Congress of 1929, held in America, came to the conclusion, however, that there is no medical sanction for recommending the adoption of the vertical type in Europe.

The directors propose to provide paying wards and these will be made available and maintained under a mutual hospital insurance scheme. The voluntary and statutory hospitals, said Dr. Kinloch, must increasingly meet the hospital requirements of the section of the population within the ambit of National Health Insurance. The wealthy would continue to make their own arrangements for hospital services, and with the development of a Mutual Hospital Insurance Service, he sees the beginning of a really adequate hospital service for Scotland.

CONTINUITY OF FAMILY SERVICE.

Dr. John M. Cowan, honorary physician to His Majesty the King, is retiring from the active staff of the Glasgow Royal Infirmary and is joining the consulting staff. In presenting a silver ink bottle, pen tray, pen and pencil, for use in the board room, he said that his family association with the infirmary was spread over 134 years, his father, grandfather, and great-grandfather having been physicians on the staff. His great-grandfather was appointed within two years of the infirmary's foundation. He added that in 1796 there had been 402 in-patients treated; 2311 in 1824; 3651 in 1861; 8448 in 1906; and 17,391 in 1930.

REACTORS IN INFECTED CATTLE.

In a bulletin issued by the Hannah Dairy Research Institute Mr. Fowler and Dr. Norman Wright give some interesting facts of the incidence of reactors in tuberculin-tested (licensed) herds in Scotland. Over the six-year period, 1923 to 1929, 28,221 official tests were recorded and 428 reactors found. The average proportion of reactors was, therefore, 1·52, representing a loss of three reactors per 100 head of milking stock per year. An examination of the number of reactors at successive six-monthly official tests showed that the loss during the first year amounted to five reactors per 100 head, falling to one reactor per 100 head by the fifth and sixth years. As to the possible infection of the milk-supply, it is shown that not more than 3 in every 10,000 animals in such herds can be considered as actively dangerous. If calculated on the 1928 cow population, this indicates that there is each year not more than one dangerously infected animal among the whole of the licensed tuberculin-tested herds in Scotland.

The sources of infection yield some interesting facts. In the histories of the 462 reactors, the source of infection was as follows:—

Infected bought-in stock, 31 per cent.; infection through contact with other reactors or untested stock, 21·5 per cent.; infection from contaminated premises or pastures, 11·5 per cent.; miscellaneous and multiple sources of infection, 19·25 per cent.; anomalous tuberculin tests, 1·5 per cent.;

> source of infection not traced, 0·25 per cent. Less than 10 per cent. of the reactors contracted infection from sources beyond the control of the owner of the herd. The remaining 90 per cent. were avoidable if due precautions had been taken.

This is a valuable investigation from the standpoint of public health. On the basis of the results many practical recommendations are made.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

SUPERVISION OF PREGNANCY.

THE Maternity Centre Association have been promoting prenatal care in New York City since 1922. It is their object to bring pregnant women under medical supervision as early as possible and to support this by nursing care, which includes instruction in the hygiene of pregnancy and the preparations needed for parturition and early infant care. They also consider it among their responsibilities to see that their clients are transferred to other hands when they have passed the crisis. During the last eight years 4726 pregnant women have been under the care of the association. Only 28 per cent. of these came under observation before the fifth month of pregnancy; 85 per cent. had registered before the completion of the seventh month; 2 per cent. did not come under care until the last month of pregnancy. During the 8-year period no woman under care died before delivery. Puerperal deaths totalled 11, or 2·2 per 1000 live births, which is about one-third of the maternal mortality of the district in which this work was done (Bellevue-Yorkville district). There were 123 stillbirths—a rate of 26 per 1000 births as compared with a general rate of 50 per 1000 births for the white population of New York. Deaths in the first month of life amounted to 132, of which 50 were in premature infants. Here the rate of 28·7 per 1000 live births compares with a rate of 30 for the city and 42·9 for the district.

Although these figures indicate that a saving of maternal and infant deaths is practicable by prenatal care, analysis of the causes of death shows that further improvement is possible. There are still deaths from causes which should be preventable—e.g., 4 of the 11 maternal deaths were due to septicæmia and 17 deaths of infants were attributed to birth injuries.

An attempt to raise the standards of obstetric practice in this country is being made by the newly formed American Board of Obstetrics and Gynecology, composed of nine members and examiners elected by the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, the American Gynecological Society and the Obstetrics section of the American Medical Association. Although not finally formed until Sept. 16th, 1930,

> This Board, it is stated, has been in the process of organisation since 1927. It puts into action a determined effort on the part of these three national organisations to improve the standards of practice of obstetrics and gynecology. It expects to accomplish this by various activities, such as the investigation add encouragement of graduate extension study facilities and active clinical assistantships for men desiring to specialise in these branches, and it will endeavour by regular examinations to determine the competence of specialists in obstetrics and gynecology who apply for the certificate. Certain outstanding *specialists will be* granted certificates on the basis of their attainments alone, but only by a vote of the entire Board after recommendation by the Committee on Requirements. A second group is asked to undergo a practical clinical examination, whereas a third and younger group has both written and clinical examination and must submit records of a group of cases in order to qualify.

The first examination will be held simultaneously in 19 different cities of Canada and the United States on March 14th.

POST-GRADUATE WORK IN NEW YORK CITY.

An announcement was made recently of the affiliation of the New York Post-Graduate School and Hospital with Columbia University, by Dr. Arthur Chace, President of the former institution, at the annual dinner of its Faculty Association. The Post-Graduate School is the pioneer institution of its kind in America, while the University occupies a high position as a teaching centre of a most cosmopolitan kind. Now that the new medical centre of the University, with its amalgamated hospitals and its hostel for medical students provides within a comparatively small area ample facilities for research and clinical work, the affiliation with the Post-Graduate School gains significance. For New York, with its immense population made up of peoples drawn from all parts of the world, furnishes a supply of human material suffering from a limitless variety of diseases. The New York Post-Graduate Medical School and Hospital, although the idea was conceived in 1875, did not come into existence until 1882, when during the intervening years it was found impracticable to teach medical undergraduates and graduates in the same classes. The pioneers of the movement requested that graduate teaching in medicine be provided in a separate building, and when their request was refused, *they resigned* and *organised* the existing post-graduate medical school, their object being "not to make more doctors, but to improve those we have." The school became very successful, having a hospital of 416 beds, as an integral part of its institution, for the lesson learned so slowly in London that such a hospital was necessary to the carrying through of a post-graduate scheme was clear half a century ago to many thinkers in New York.

Under the arrangement which becomes effective on July 1st next, the trustees of the New York Medical School and Hospital will remain entirely responsible for the financial conduct of the scheme, while the educational work will be under the control of Columbia University. It may be pointed out that the whole field of study in clinical medicine at Columbia University is very extensive, as it will be carried on not only at the medical centre, and, now, at the New York Post-Graduate Medical School and Hospital, but as previously at St. Luke's Hospital, at Mount Sinai Hospital, at the Montefiore Home, and other institutions (see THE LANCET, 1929, vol. i., Special Supplement, p. x.). The *affiliation* must be of great practical value to many medical men, and it is fitting that the pioneer post-graduate medical school in America should take the initiative in the matter.

AN UNEXPLAINED MILIARY DISEASE OF THE LUNGS.

In the spring of 1927 the U.S. Bureau of Mines, in conjunction with two private associations, undertook to establish a clinic at Picher, Oklahoma, for the study and control of silicosis and tuberculosis among the miners. By the end of 1929, 18,285 people had been examined. Quite early in the work an occasional case of what was radiographically a miliary tuberculosis was found. However, in many cases there was almost no history to suggest tuberculosis and in all but two cases the patients were apparently healthy. In some cases the men had not yet begun to work or had been at work in the mines for a few days only.

Altogether 125 cases of this unknown miliary disease were discovered. Summarised case-histories of each of these are now reported[1] with a discussion of the findings. The pictures are said to differ radically from those of pneumonoconiosis in which lineal markings are more clear-cut. If the disease is miliary tuberculosis, then our conception of the latter condition must be revised for none of the 125 has died. In the 85 cases in which sputum was examined tubercle bacilli were found in two only. The condition may be produced by fungus infection. The authors believe that it is identical with the miliary calcification described by Sutherland.[3]

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[1] Sayers, R. R., and Meriwether, F. V.: Miliary Lung Disease Due to Unknown Cause, U.S. Pub. Health Rep., 1930, xlv., 1991.

[3] Sutherland, E. G.: Miliary Calcification of the Lung, Med. Clin. N. America, 1925, viii., No. 4.

PUBLIC HEALTH SERVICES

LOCAL AUTHORITIES AND ADVICE ON BIRTH CONTROL.

CIRCULAR 153/M.C.W., issued by the Ministry of Health last July, requested local authorities to make provision for instruction in birth control for married expectant or nursing mothers in whom further pregnancy would be detrimental to health. In this circular it was stated that, in the view of the Government, it is not the function of child welfare and antenatal centres to give advice on birth control, inasmuch as their use for such a purpose might damage the proper work of the centre; but local authorities have power to give advice to certain groups of women under conditions set out in the circular.

MANCHESTER.

Dr. R. Veitch Clark has told the Manchester City Council that advice to practise birth control is valueless without clinical instruction, but he adds that the establishment of a birth control clinic at any of the existing centres would, in the present state of public opinion, be highly undesirable. The service given to maternity in Manchester must not, he says, be injured by exposure to adverse criticism, even though such criticism may be uninformed. Dr. Clark's recommendation is to provide instruction in birth control as part of the routine work in the obstetric and gynæcological departments of the Crumpsall and Withington Hospitals. This has certain advantages. Women for whom contraception is medically advisable frequently suffer from gynæcological conditions which require treatment, and to provide facilities at such a department would not stamp it definitely as a birth control clinic. The work would, he thinks, contribute to the lessening of maternal morbidity in the city. Medical opinion, he admits, is not at present satisfied either as to the harmlessness of the continued use of contraceptives on the individual or as to their success in preventing conception. It should not therefore be suggested that such methods have more than a reasonable chance of success.

BIRMINGHAM.

Dr. H. P. Newsholme in a report to the Birmingham City Council lays stress on the fact that it is only permissible for local authorities to give advice on birth control in cases where further pregnancy would be detrimental to health. The Ministry does not define what is meant by "detrimental to health," and it is manifestly impossible to draw a hard-and-fast line between health reasons and social reasons. Some medical officers, he thinks, would feel justified in regarding a large or a young family living on a small income as providing circumstances which would cause a further pregnancy to be detrimental to health. Other medical officers would not. The memorandum of the Ministry makes no reference to the husband, and he quotes with approval Canon Lyttelton's remark: "The broad fact remains that abstinence is possible except to those who keep on saying it is not." He thus reaches the position that while birth control may be necessary from time to time, and at a certain stage permanently, there are grave risks of degradation from the careless or unthinking use of mechanical methods, which makes it undesirable to lend them the weight of public authority. He lays stress also on the fear of conception that must persist when any method of contraception is used which is not free from risk of failure. The true course would be to imbue the community with the knowledge that self-restraint is the standard; advice on contraception would in itself almost inevitably weaken the resolution towards self-restraint. For medical officers who take a different view, reference can be made to a practitioner or a hospital (including the voluntary birth control clinic) for particular advice. Dr. Newsholme doubts whether under present circumstances it is practicable to give systematic instruction in methods of self-restraint; the first step towards making it possible to do so is for the simpler alternative of contraception to be rejected. If such advice were feasible it would cover:

(a) Practical measures to minimise the incitement to physical association.

(b) Encouragement of points of contact and of mutual interests at other levels of life; removal of incomplete understanding or reticences which limit contact at such levels and thereby emphasise need for contact at the physical level.

(c) Help in gaining new lines of interest capable of utilising the energies of both in fresh directions, allowing the individual to "sublimate" the sex impulse.

(d) Assistance in removal of factors of discouragement, lack of interest or loss of idealism which encourage over-stressing of the purely physical relation.

The voluntary birth control clinic, which was opened in April, 1927, at 9, Castle-street, Birmingham, has recorded 5500 attendances at a cost of £2000, collected by private subscription. The committee of the clinic, which includes Dr. M. Hamblin Smith, Dr. H. F. Humphreys, Dr. E. C. Macirone, and Dr. D. M. Sandilands, has decided that in view of Dr. Newsholme's report the clinic must continue to shoulder the responsibility for instruction on birth control in Birmingham.

RECRUDESCENCE OF CEREBRO-SPINAL FEVER.

IN many parts of the world there have recently been indications of increased prevalence of cerebro-spinal fever. The incidence in the United States, for example, has risen from 1859 cases in 1925 to 9660 cases in 1929. In 1929 when there was prevalence above the average in England and Wales the total cases were 650. In the same year there was a sharp epidemic in Glasgow, where 134 cases occurred with 112 deaths, a case-mortality of 83·6 per cent.[1] In recent weeks there has been an increase in the notification of cases, the totals in England and Wales being for the week ending Jan. 3rd, 19; Jan. 10th, 26; Jan. 17th, 29; Jan. 24th, 20; Jan. 31st, 27; and Feb. 7th, 48. Local outbreaks have occurred in the West Riding of Yorkshire, especially at Thorne and Maltby; in the latter place 17 cases have been notified. The local influenza prevalence in certain Army and Air Force units has been associated also with the occurrence of a small number of cases of cerebro-spinal fever. Thus since Jan. 1st, 1931, 10 cases have been notified in the Aldershot Command, five in the Eastern Command, and six among the personnel of the Royal Air Force at Uxbridge. At Aldershot, with the exception of one fatal case in a nurse who was nursing the patients with the disease, all the cases have occurred in men who have had influenza; they belong to various units and do not come from any one regiment or building. The epidemiological sequence of the cases generally has been of the usual kind—that is to say, they have been scattered and have occurred at the period of greatest prevalence.

ENTERIC FEVER IN ESSEX.

THE total number of known cases of paratyphoid occurring in Essex between Feb. 1st and 14th has been 172, the districts mainly affected being Epping Urban, Epping Rural, Loughton Urban and the Borough of Walthamstow. The infecting organism has been paratyphoid B. The illness in many cases has been severe but the fatality has been relatively low and only four deaths have occurred up to the present time. By arrangement with the London County Council, most of the patients have been treated in that Council's infectious diseases hospitals, but others have been admitted to the London Fever Hospital, the Connaught Hospital at Walthamstow, and the Ilford Isolation Hospital.

Inquiries made by Dr. W. V. Shaw, a medical officer of the Ministry of Health, in consultation with the medical officers of health of the county and of the districts concerned, appear to have shown that the origin of the epidemic was the infection of a particular milk supply at a dairy farm in the Epping Rural District. The infection seems to have been introduced by one of the employees on the farm, who, unknown to himself, was suffering from a mild attack of paratyphoid while at work handling the milk before its distribution. For several days the milk thus infected was consumed by a considerable number of persons in surrounding districts, some of whom have suffered from the disease.

At the farm in question all the employees have been examined and all those suspected of possibly carrying infection, including the man considered to have been the source of infection, have been removed to hospital and their place at the farm taken by other workers kept under close medical supervision. The distribution of milk from the farm was discontinued for the time necessary for the premises, milk utensils, etc., to be thoroughly cleansed and disinfected to the satisfaction of the medical officer of health, and in the view of the Ministry of Health there is now no reason to apprehend further infection of the milk at this farm.

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[1] See THE LANCET, Jan. 24th, 1931, p. 199.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 7TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 213 (last week 280); scarlet fever, 1683; diphtheria, 1316; enteric fever, 44; pneumonia, 2295; puerperal fever, 48; puerperal pyrexia, 127; cerebro-spinal fever, 48; acute poliomyelitis, 8; encephalitis lethargica, 16; continued fever, 1; dysentery, 20; ophthalmia neonatorum, 92. No case of cholera, plague, or typhus fever was notified during the week.

The 48 cases of cerebro-spinal fever were notified from the following 14 counties: London, 9 (scattered over 6 boroughs); Cumberland, 1 (Cockermouth); Devon, 1 (Plymouth); Durham, 1 (Sunderland); Essex, 3 (West Ham 1, Ilford 2); Hertford, 1 (Hitchin); Lancaster, 11 (Liverpool 4, Accrington 1, Farnworth 2, Horwich 1, Little Hulton 1, Swinton and Pendlebury 2); Northumberland, 2 (Newcastle-on-Tyne); Southampton, 2 (Portsmouth); Stafford, 1 (Coseley); Sussex West, 2 (Shoreham 1, Horsham 1); Yorks, West Riding, 12 (Barnsley 3, Conisbrough 1, Maltby 5, Doncaster 1, Handsworth 1, Knaresborough 1); Glamorgan, 1 (Cardiff); Monmouth, 1 (Newport).

The number of cases in the Infectious Hospitals of the London County Council on Feb. 10th–11th was as follows: Small-pox, 206 under treatment (last week 250 under treatment and 2 under observation); scarlet fever, 1545; diphtheria, 1929; enteric fever, 35; measles, 112; whooping-cough, 260; puerperal fever, 30 (plus 10 babies); encephalitis lethargica, 120; poliomyelitis, 3; "other diseases" 113. At St. Margaret's Hospital there were 7 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 4 (2) from enteric fever, 72 (1) from measles, 7 (1) from scarlet fever, 49 (11) from whooping-cough, 50 (9) from diphtheria, 45 (11) from diarrhœa and enteritis under two years, and 331 (97) from influenza. The figures in parentheses are those for London itself. Five deaths from meningococcal meningitis occurred in London, one of them in age-group 15–25.

The fatal cases of enteric fever outside London occurred at Manchester and Halifax. Twenty-six fatal cases of measles were reported from Liverpool, 12 from Newcastle-on-Tyne, 6 from Hull, and 4 each from Bristol and Birmingham. West Ham and Blackburn each reported 4 deaths from whooping-cough, Southampton, Gloucester, Liverpool each 3. Diphtheria claimed 7 victims at Liverpool, 3 at Leeds. Diarrhœa was credited with 6 deaths at Manchester and 5 at Sheffield. The 234 fatal cases of influenza outside London are scattered over 75 great towns: 25 were reported from Liverpool, 9 from Plymouth, 8 from Sunderland and Newcastle-on-Tyne, 7 each from Leicester, Birkenhead, and Bolton, 6 each from Croydon, Birmingham, Preston, and Middlesbrough.

The number of stillbirths notified during the week was 244 (corresponding to a rate of 37 per 1000 births), including 33 in London.

POST-GRADUATE COURSES AT NEWCASTLE.—It is announced in our advertisement columns that post-graduate courses in many different subjects have been arranged in the University of Durham College of Medicine, Newcastle-upon-Tyne. A general course in medicine and surgery will be held from April to June, and a fortnight's intensive course in September. Syllabuses may be had from the registrar of the College.

POST-GRADUATE WORK IN MANCHESTER.—Manchester is to be busy with post-graduate teaching for the next few months, for courses are being held or to be held at no fewer than four of the bigger hospitals. These are: at the Royal Infirmary, Feb. 24th to May 15th (Tuesdays and Fridays), at St. Mary's Hospitals, Feb. 13th to March 20th (Fridays), at Ancoats Hospital, Feb. 26th to April 16th (Thursdays), and at The Victoria Memorial Jewish Hospital, March 4th to May 20th (Wednesdays). The time of all of them is about 4.15 P.M. and no fee is asked. At St. Mary's there are to be demonstrations in antenatal work, and lectures on children's diseases; at the other hospitals the subjects are concerned with general and special medicine and surgery. In addition Ancoats Hospital has clinical teaching every Thursday in term time from 11 A.M. onwards.

CORRESPONDENCE

PROPAGANDA AND MEDICINE.

To the Editor of THE LANCET.

SIR,—As one who has during three years been gaged almost solely in this work, and has addressed ver 600 popular audiences in all parts of Great ritain, may I join in the discussion which your ading article on propaganda will evoke?

Those who fear modern efforts towards popular lucation in health appear to think that the public e quite incurious about themselves and their nesses. If humanity were in a state of primal nocence regarding disease, there would be some stification for not disturbing so healthy a condition. ut in the modern world, where advertisement and sertions are confused with truth and research, this not the attitude of mind of a great majority of tients. They have formed theories upon their ness, they have consulted friends and popular anuals, and the physician has not only to deal with e disease but the patient's notion of what treatment ought to have. When treatment involves residence an institution, an operation or some severe dislocaon of the normal life, the pathological condition cedes, and the adventitious circumstances of e patient's views remain to embarrass the doctor. ntil recent years the ordinary person has had little pportunity of obtaining authoritative teaching which ill help him to form a correct opinion when the need mes. Health propaganda has arisen not to create aura of symptomatology, but to answer an immense terrogation in the public mind. These doubts and fficulties are not found only among the poor. my view there is an even greater field for wellrected propaganda among the educated. More and ore medical affairs are being directed by comittees of lay people who have sometimes not had e opportunity of forming unprejudiced notions upon e important questions which they have to decide.

Whether fear is a weapon serviceable in the camign against cancer, I am not competent to press an opinion. But in tuberculosis propaganda s utility has long since passed away. The fact that opular teaching on this subject was started 23 years go may help to explain this. In the lectures ganised by the National Association for the revention of Tuberculosis an effort is made to make e accent positive rather than negative; upon the omotion of health rather than the avoidance of sease.

It is my opinion that the need for accurate, oderate, and intelligible health propaganda will crease, and that, if directed by responsible persons ith medical knowledge, it will assist invaluably in eeting the vast tide of unhealthy influences around us.

I am, Sir, yours faithfully,

HARLEY WILLIAMS, M.D., D.P.H.

Tavistock House North, Tavistock-square, W.C.1,
Feb. 16th, 1931.

BARBITURATES AS BASAL HYPNOTICS.

To the Editor of THE LANCET.

SIR,—May I add a word to the interesting paper n nembutal by Dr. Magill in THE LANCET of an. 10th? It was largely through Dr. Magill that y interest in nembutal was aroused and I can nhesitatingly endorse his conclusions.

About four years ago somnifeine was suggested to me as a pre-anæsthetic hypnotic, and when administered intravenously its effect was very much the same as that produced by nembutal. Reports as to its safety were, however, not reassuring, and the death of some animals to which it was administered in the research department of the Cancer Hospital caused me to abandon its use after four cases.

Some 18 months ago I first gave luminal by the mouth for pre-anæsthetic medication, and generally (especially when combined with small doses of morphine) the results were good, although its effects varied in different patients. With the advent of the intravenous administration of the more rapidly acting barbiturates the whole matter seems to have been put on an exact basis. As a basal, pre-anæsthetic hypnotic I have administered nembutal intravenously in 108 cases, amytal in 40 cases, and pernocton in 18 cases. There is no doubt in my mind that nembutal is the best of the three drugs. In the majority of the cases there was a fall in the systolic blood pressure of 10–15 mm., whereas with amytal the fall was usually about double this amount. In one case to whom I gave 1–2 g. (and obtained complete anæsthesia) the systolic blood pressure dropped 70 points within five minutes, and within one hour's time was 85 mm. lower than before the administration of the amytal. Generally speaking, patients do not appear to keep quite so fit and are more liable to sweat than with nembutal. Post-operative restlessness is decidedly more marked. With pernocton results were not so good; several patients vomited soon after having it, and one had a rigor. The production of unconsciousness is not so rapid, hence the necessity for very slow administration. This combined with the smaller volume of liquid make it difficult to administer.

As with most hypnotics the action of the barbiturates can be greatly increased by the simultaneous administration of small doses of morphine. There is a longer period of insensibility and the respiratory centre often becomes somewhat depressed at the same time. For several very toxic cases of exophthalmic goitre nembutal combined with morphine and hyoscine have given most satisfactory results; also as a preliminary to spinal anæsthesia it is extremely valuable. In nearly every case much less anæsthetic is required to produce relaxation, but I have not spared ether when necessary, and I have not had a single patient vomit after nembutal.

In general medicine (as apart from anæsthetics) the barbiturates appear to have a large field of use. I have used nembutal for insomnia with good results, but its effects are not as lasting as those of medinal. In one case—a man with intractable insomnia after bouts of alcoholism—I was able to produce five and a half hours' peaceful sleep with grs. 4½ of nembutal given by the mouth, where previously grs. 60 of potassium bromide and grs. 30 of chloral had given him less than two hours' restless sleep. Restlessness, when it occurred, I treated by bromide and chloral given per rectum, and in one case with paraldehyde. Caffeine sodium benzoate is said to be an antidote for the barbiturates. I have given it subcutaneously and intravenously, but was disappointed with its action. It seems rational to treat restlessness by bringing the patient quickly out of the influence of the barbiturate and then substituting another hypnotic. Thyroxine, which increases the metabolic rate, appears to do this more rapidly than caffeine sodium benzoate.

Innovations are usually productive of scepticism; the present use of the barbiturates will doubtless prove no exception, and they may act as scapegoat for many untoward happenings before their usefulness is fully established.

I am, Sir, yours faithfully,
STANLEY ROWBOTHAM.

Wimpole-street, W., Feb. 11th, 1931.

SEX DETERMINATION.

To the Editor of THE LANCET.

SIR,—It may be of comparative interest to know that in the case of the cow, service at the first, third, fifth, &c., œstrum following parturition results (if conception takes place) in progeny of the opposite sex to that of the preceding pregnancy, and that service at the second, fourth, sixth, &c., œstrum results in progeny of the same sex. One well-known local estate agent has compiled records from herds which he has known for some years, and the correctness of this statement is startling. In cases where it appears to fail one can usually find that either the cow was not served at that particular œstrum, or was served but did not conceive.

It may also interest workers in human sterility to know that I have found extract of corpus luteum successful in stopping premature births in bitches, and cutting short what appeared to be a serious epidemic in kennels.—I am, Sir, yours faithfully.

J. F. D. TUTT, M.R.C.V.S.

Winchester, Feb. 14th, 1931.

To the Editor of THE LANCET.

SIR,—Major Williamson quotes me as inferring that "children conceived before the tenth day after the beginning of a period may be of either sex." This is erroneous, because in a normal woman one month is fruitful to both sexes, the other is blank, or entirely fruitless. In the fruitful month any day from the third to the sixteenth (from the beginning of period) may be productive of male issue only; the days from the tenth to the sixteenth being the most likely. The Mendelian theory presupposes the sex of a child to depend wholly on the number of chromosomes in the fertilising spermatozoon. Even if this be so in part, the ovum must still remain the predetermining factor; according to her menstrual cycle, the female will invariably select the larger or smaller cell to fulfil her requirements. In other words, she will, as Mr. Huxley puts it, "let in one or the other kind of sperm at will, or rather according to physiological state. . . ."

I am, Sir, yours faithfully,
CICELY G. ERSKINE.

Eccleston-square, S.W., Feb. 16th, 1931.

A SUGGESTED CAUSE OF NEPHROSIS.

To the Editor of THE LANCET.

SIR,—I was interested in Dr. Bruce's letter. I should have thought the sudden development of œdema of the face and feet, accompanied by a feeling of lassitude but with no other symptom, as met with in the trenches during the war, was rather against the idea that nephrosis may be purely or in any way bacterial in origin. The occurrence of this syndrome, also insidiously in late pregnancy, in women up to the attack perfectly well, also opposes it. Even in scarlet fever the development of this syndrome—again in the same insidious manner—usually (always, I think) at a period when the virus of the original disease (so I understand) has completely disappeared from the system supports my criticism. The presence of albumin and of hyaline and granular tube-casts in the urine does not necessarily indicate a degenerative change in the kidney due to bacteria or to their toxins; such changes occur in healthy althletes after rowing a race. Nor is the presence of leucocytes or of cocci convincing. That an autogenous vaccine, used in acute cases, the patients being put to bed and dieted, should have been proved most satisfactory is not surprising either. Dr. Bruce fails to give us the result of a control series in which treatment (of two months' duration) identical in all except the supposed curative agent was applied. Is not a two months' treatment with a water diet in the early stages, apart from any vaccine, followed by a large percentage of cures? In the pre-eclamptic toxæmia it works almost every time.

There is another possible explanation of nephrosis more reasonable than that of the bacterial or toxæmic, to which I invite Dr. Bruce's attention. It is that a turgescence of the renal medulla (by blood) occurs blocking by its pressure the uriniferous tubules, thus leading to a distension of the cortex (by urine in tubules and glomeruli) and thus to an anæmia relative or absolute of the part, with consequent and inevitable degenerative changes. It is an interesting conception, supported by much evidence. It arose from a study of the renal condition in eclamptic states,[1] but seems applicable to states outside pregnancy. It has long been known that exposure to cold may usher in an attack of "nephritis"; it is not unreasonable to suppose that a general constriction of cutaneous arterioles induced by exposure to cold reflexly produces a congestion of internal parts. In trench warfare, therefore, a congestion of internal parts may be expected. It requires sifting the evidence and a long argument to show that the renal medulla is likely to be especially affected—but the possibility is there. The same holds in the case of scarlet fever. This is a disease in which the whole skin is acutely affected; the subsidence of the cutaneous inflammation is likely to be associated with a vasomotor disturbance of internal parts, a pathological process being precipitated by slight causes. The affections of the skin are related with such changes as shown by the occurrence of duodenal ulcers with burns. These are no more due to the action of bacteria or their toxins than are the ordinary gastric or peptic ulcers which appear.

Whilst there is much need for an investigation of the reflex vasomotor changes which occur, it may be stated that the evidence indicates that in the development of nephrosis the play of bacteria or of their toxins or of other toxins is certainly not the sole, and most probably not even an important agent.

I am, Sir, yours faithfully,
R. H. PARAMORE.

Rugby, Jan. 31st, 1931.

DISSEMINATED SCLEROSIS: EXPERIMENTAL VACCINE TREATMENT.

To the Editor of THE LANCET.

SIR,—For some time past, in conjunction with Miss K. Chevassut, I have been engaged in a research upon an experimental vaccine treatment of disseminated sclerosis. A preliminary communication on the subject was published in THE LANCET of March 15th, 1930.

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[1] Paramore, R. H.: Eclampsia and Its Renal Lesion, Jour. Obstet. and Gyn., Brit. Emp., 1929, xxxvi., 341.

For her research work Miss Chevassut received a grant from the Medical Research Council.

Meanwhile, also under the auspices of the Medical Research Council, independent observations, biochemical and bacteriological, were carried out by Dr. E. A. Carmichael. His results, when submitted to the Council, differed in many material respects from those of Miss Chevassut. Accordingly the Medical Research Council advised Miss Chevassut to demonstrate certain of her observations in the laboratories at Queen-square under her own test conditions. I myself repeatedly urged her to do this.

For reasons of her own Miss Chevassut has refused to comply with my wishes and those of the Medical Research Council. I have therefore had no alternative but to dissociate myself from Miss Chevassut. The research at Westminster is being continued.

I am, Sir, yours faithfully,
J. PURVES-STEWART.

Buckingham-street, Victoria, S.W., Feb. 10th, 1931.

*** We have received the following communication from the Halley Stewart Trust Office:—"The Halley Stewart Trust has generously provided spacious freehold premises at Hampstead for an independent Institute, the equipment of which will be shortly completed, where Miss Chevassut's research and the clinical work in disseminated sclerosis, and kindred ailments, will be continued in conjunction with a consulting physician, and with all the desired conditions at command which experience has proved to be essential to secure the most favourable results. The resources of the new Research Institute will be open to all members of the medical profession and to all hospitals. Any communications should be addressed to the secretary, the Halley Stewart Trust, 0, Chesterford-gardens, London, N.W.3."—ED. L.

A CASE OF ALEUKÆMIC LEUKÆMIA.

To the Editor of THE LANCET.

SIR,—Surely the remarkable case described under the above heading by Drs. A. W. Brodribb and Lazarus-Barlow on p. 347 of your last issue was one of "agranulocytosis" connected with an acute infection, in which the *noxa* acted much more on the leucoblastic than on the erythroblastic elements of the bone-marrow? Owing to an infection a case of lymphatic leukæmia (whether it be a case of leukæmic or hypoleukæmic or so-called "aleukæmic" lymphadenosis) may terminate with "agranulocytosis." The condition was allied to a terminal aplastic anæmia or to the class of "aleukia" (compare S. C. Dyke, THE LANCET, 1924, i., 1048) of Frank. That may explain what happened in the case in question, and, if so, the case was in a sense a case of aleukæmic leukæmia. It would have been interesting to know the thrombocyte count.

I am, Sir, yours faithfully,
London, W., Feb. 15th, 1931. F. PARKES WEBER.

GASTRIC SYPHILIS.

To the Editor of THE LANCET.

SIR,—With reference to the annotation on Gastric Syphilis in your last issue, it is of interest to note that bismuth, so successfully used for many years in the treatment of gastric ulcer, is to-day replacing mercury in the treatment of all stages of syphilis. Is it justifiable to infer that a certain percentage of gastric ulcers is specific? The type of ulcer found in cases which are operated upon for perforation is often crateriform or "punched out," that is to say that it is analogous morphologically with the late specific cutaneous ulcer. Further investigation would appear to be worth while.

I am, Sir, yours faithfully,
RODERICK J. G. PARNELL,
Feb. 16th, 1931. Surgeon-Commander, Royal Navy.

EARLY REFORMERS OF ASYLUMS.

To the Editor of THE LANCET.

SIR,—I am afraid that one or two errors have inadvertently crept into the report of what I said at the Royal Society of Medicine on this subject. It is true that William Tuke propounded his scheme for the foundation of The Retreat at York in 1792, but it was not until 1796 that it was actually opened for the reception of patients. Again, it is mentioned in the report that it was "not until the Lunacy Commission was established in 1845 that gross abuses were swept away," but my reference was to the report on madhouses published in 1815. There were Commissioners before 1845, but it was in that year that the permanent Board of Commissioners in Lunacy was established by Act of Parliament. Gardiner Hill, Conolly, and Charlesworth had carried out their reforms before the latter date.

I would also point out two misspellings in the names in the report; Couthon should be Couthon, while Daquin spelt his name thus.

I am, Sir, yours faithfully,
HUBERT J. NORMAN.

Camberwell House, Peckham-road, S.E., Feb. 17th, 1931.

THE LATE MR. A. E. G. TURNER.

To the Editor of THE LANCET.

SIR,—May I through your columns tender thanks for very many letters received from clients and friends in the medical profession sympathising in my loss of a son who was a valued companion in my business.

I should also like to thank you and your staff for very kind expressions of sympathy.

I am, Sir, yours faithfully,
PERCIVAL TURNER.

4 and 5, Adam-street, Strand, W.C., Feb. 17th, 1931.

BRITISH MEDICAL ASSOCIATION.—*Scholarships and Grants in Aid of Scientific Research*:—Scholarships: The Council of the British Medical Association is prepared to receive application for Research Scholarships as follows: an Ernest Hart Memorial Scholarship, of the value of £200 per annum, and three Research Scholarships each of the value of £150 per annum. These Scholarships are given to candidates whom the Science Committee of the Association recommends as qualified to undertake research in any subject (including State Medicine) relating to the causation, prevention, or treatment of disease. Each Scholarship is tenable for one year, commencing on Oct. 1st, 1931. A scholar may be reappointed for not more than two additional terms. A scholar is not necessarily required to devote the whole of his or her time to the work of research, but may hold a junior appointment at a University, medical school, or hospital, provided the duties of such appointment do not interfere with work as a scholar.

Grants: Grants for the assistance of research into the causation, treatment, or prevention of disease are also given by the Council, when preference will be given, other things being equal, to members of the medical profession and to applicants who propose as subjects of investigation problems directly related to practical medicine.

Conditions of Award: Applications: Applications for Scholarships and Grants must be made not later than Saturday, May 23rd, 1931, on the prescribed form, a copy of which will be supplied on application to the Medical Secretary of the Association, B.M.A. House, Tavistock-square, London, W.C.1. Applicants are required to furnish the names of three referees who are competent to speak as to their capacity for the research contemplated.

PANEL AND CONTRACT PRACTICE

A Modern Jeremiad.

A GENERAL practitioner, writing in the *Medical Press* of Feb. 4th, who does not disclose his identity, remarks that the panel system has for the most part ruined the feeling between patient and doctor. That is, he says, an outstanding fact. A very large proportion of patients hate the panel and everything to do with it, while many feel it to be definitely degrading; any extension of the system would do still further harm to the medical profession. It is a system that breeds annoyance such as unnecessary night calls, for it makes no difference to the patient whether he sends for the doctor at 9 a.m. or 11 p.m.; a private patient who pays one and a half to twice the normal fee knows better than to do it without reason. The panel surgery is packed with patients suffering from trivial ailments such as colds and gnat bites, none of which the sufferer would regard as worth a fee of 5s. The system allows of the employment of assistants whereby a patient is forced to put up with treatment by a medical man not of his own choice. The panel doctor is called upon to issue and sign without fee large numbers of forms, certificates and chits, while the panel is used by many as a rest cure and as a change from work.

Whatever justice there may be in this comprehensive complaint, it has at all events been set out before with equal pungency. Some of the items do not deal with things as they are. It is not unusual for a busy practitioner with a big list of insured patients to remark on the fewness of his night calls; if he has given up midwifery he may get none at all. The assistant only comes on the scene if the practitioner's list exceeds 2500, and then only with the sanction of the insurance committee. But the novelty is the suggestion for the avoidance of these drawbacks in the future. The writer believes that, were panel work to be paid in the same way as the National Deposit Friendly Society pays for its members, the great bulk of the ill-feeling to the present system would disappear. The doctor would then be paid for work actually done. There would be absolute freedom of choice of doctor and patient; the service might then become a complete one, including anæsthetics, X rays, massage, dental, and ophthalmic treatment. At the same time he would restrict medical officers of health and school medical officers to their proper sphere of inspection and reference. He would arrange with some local authority to save the practitioner a large part of his clerical work, and as for old-age pension papers, where his signature is essential the doctor would be paid a fee for each signature. To avoid over-pressure of work he would create a category of chronic patients who could be deflected down some other channel, either to a deputy regional medical officer or to the out-patient department of the local hospital. Finally he would remodel the national health insurance scheme to become of a contributory and genuinely insurance nature and entirely self-supporting. If no retaining fee were introduced into the revised panel system the line of cleavage between insurance and non-insurance practitioners would disappear and their relations would, he thinks, return to those which existed so happily before 1909.

But, as the chairman of the Coventry Insurance Committee remarked the other day, the existing health insurance scheme is actuarially sound, in happy contrast with certain other insurance schemes; and this in spite of the withdrawal of the exchequer grant. If contributions became voluntary what would be the income of the approved societies and, incidentally, how many practitioners in industrial areas would escape bankruptcy? Professional incomes, instead of growing with the diminution of sickness and the improvement in the general health of the community, would be entirely dependent on the volume of sickness, on epidemics and similar catastrophes. There may be defaulters in panel practice; no scheme, however Utopian, will entirely exclude commercialism. But is not the anonymous practitioner trying to put back the clock?

Cost of Drugs

At a recent quarterly meeting of an insurance committee the chairman gave some figures intended to illustrate the fact that there is no limitation on the supply of drugs and appliances to insured persons as far as these are required for efficient treatment. In three recent cases oxygen was, he said, supplied for treatment on the following basis: (1) 24 prescriptions in 26 consecutive days, covering a total quantity of 940 cubic feet of oxygen at a cost of £11 17*s.* 3*d.*; (2) 22 prescriptions of oxygen in 28 days at a cost of £32 5*s.* 4*d.*; (3) 12 prescriptions of oxygen in 20 days at a cost of £3 6*s.* 4*d.*

NATIONAL COUNCIL FOR MENTAL HYGIENE.—A meeting of this Society was held at the rooms of the Medical Society of London on Thursday, Feb. 12th, Sir Squire Sprigge in the chair, when Mrs. Neville-Rolfe, secretary-general of the British Social Hygiene Council, delivered a thoughtful address on modern marriage and its problems. Regarding these problems, as they affected the race, social order, and the individual, she analysed the reasons for many of the prevalent problems and anomalies associated with marriage to-day among civilised peoples, and found that their solution or removal would follow a wider acceptance of biological tenets. This view she reconciled with the advocacy of monogamy as the basis of that family life, on which progressive society should rely.

At the conclusion of the address Dr. Doris Odlum, hon. secretary for propaganda, brought the work and the needs of the National Council for Mental Hygiene to the attention of a crowded room. She said that the Council acted as a liaison body between the general public and the medical profession and provided a common meeting ground for those interested in the questions of mental hygiene, especially in its sociological aspects. The human factor was coming more and more to be appreciated as the essential determinant of conditions in education, industry, politics, and above all in marriage and the home. Propaganda was, however, still greatly needed. This was carried out by means of lectures and public meetings; by conferences such as that held most successfully in November, 1929, which was to be followed up by another conference from May 27th to 29th this year; and by the work of expert sub-committees. One of the directions in which there was an urgent need for public education was that of the extension of facilities for preventive and early treatment of nervous breakdown and allied emotional and minor mental disorders. The annual economic loss caused by illness of this nature, to say nothing of the human suffering involved, made this problem one that urgently needed constructive measures. She therefore urged all those present to take their share in promoting activities of such vital importance both to the individual and to the nation, by joining the National Council for Mental Hygiene.

NURSES AT ST. BARTHOLOMEW'S HOSPITAL.—The League of St. Bartholomew's Hospital Nurses has raised over £1000 to name and endow a bed in the new surgical block of the hospital.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

DANGERS OF IMPURE MILK.

IN the House of Lords on Feb. 10th, as already iefly reported, Viscount ASTOR stressed the need developing the demand for the supply of British lk, but there must be a guarantee that the milk ered to the public was reasonably safe and clean. an methods of milking and handling, he said, would t cost much.

Lord Moynihan on Pasteurisation.

Lord MOYNIHAN said he would like to offer all the pport he could to the plea of Viscount Astor for increase of the supply of milk to this country; t he offered that support with certain qualifications. he might assume for a moment a representative pacity he would say that the whole medical profession this country would support the noble Viscount's a. They had all lived for a considerable period of ir lives on nothing but milk which was almost ential for the growing youth of the nation. tistics might be said to prove anything, even the th, and the truth was that milk was an essential redient in the food of young, growing children. was also a most necessary aid to people in advanced urs of life and especially in times of sickness. It s therefore almost a commonplace to say that ry effort should be used to secure to the people all times a supply of milk commensurate with their ds, a supply that should be cheap and of good ality, free from those frequent contaminations that de milk so dangerous an article of diet in a large portion of cases. They were all interested a few rs ago by the question, what is whisky? He uld venture to ask, what is milk? The correct swer, of course, should be that milk was the pure duce of the mammary glands of the cow, but was rarely that. Milk in many instances was con- minated by secretions of the udder and discharges m tuberculosis. It was contaminated almost tolerably with dung, with the hair of the cow, with e dirt and sweat from the man or woman who milked e cow, from the dust of the streets and from the ensils in which milk was stored and carried about e country. The inevitable result was that milk ght be, and very frequently was, capable of causing number of diseases which the medical profession s called upon to treat. The more serious of those eases was, of course, surgical tuberculosis. The ers were typhoid fever, paratyphoid fever, diph- eria, scarlet fever—almost all infections from infected lk. This was a condition that had been going on m the very birth of human history, for one of the lest specimens available from the Neanderthal n showed his vertebræ were affected by surgical berculosis, due, he had no doubt, to the drinking contaminated milk from the animals at his disposal. e many specimens taken from the mummies of cient Egypt showed that cows in ancient Egypt had bercle and were capable of giving the disease to n.

A HUMAN PROBLEM.

The problem, therefore, of an increased supply milk was not the only problem. As one walked out the streets, not so much in London as in ovincial towns, one saw a large number of hunch- ks, people with warped joints, people with necks ll of glands, scars on the neck from abscesses, and large number of these people suffered from their seases because of the drinking of contaminated milk. e thought that the minds of men were much more sturbed by acute events than they were by the ronic diseases to which they had long become customed. One heard with anguish of the loss of 000,000 men in the late war, and yet the public emed almost indifferent to the fact that 50,000 ople died every year in this country from cancer, that 100 people died every day from tuberculosis, and that no less a sum than £250,000 a day was spent on the treatment in this country alone of tuberculosis, a large proportion of which was preventable. When acute outbreaks occurred the minds and hearts of men were stirred. He had made a note of a few of the occasions on which there had been acute outbreaks from the drinking of contaminated milk in this country in the last few years. In Brighton and Hove in the last three months of 1929 there were 1000 cases of infection, with 65 deaths. In London, 90 per cent. of the milk of which was pasteurised, there were 400 cases in 1928; in Northampton in 1926 there were 95 cases of scarlet fever traced to contaminated milk; in Bedford in the same year there were 72 cases of scarlet fever also traced to contaminated milk. But in hearing of these diseases caused by milk it was not realised that the morbidity and the mortality which resulted from the drinking of impure milk not only affected people in the way he had described, but opened the door to a multitude of other illnesses which themselves proved fatal. A little time ago he amputated the thigh of a man, aged 71, who had suffered since the age of 8 when he was operated upon by Sir William Lawrence for tuberculous disease of the bones of the leg. He had had 18 operations in the intervening period, and at the age of 71 he (Lord Moynihan) removed his thigh. There would be no mention in the man's eventual death certificate of the fact that he had ever suffered from tubercle. So when they read mortality lists of patients the cases of surgical tuberculosis were quite frequently not included.

EXTENT OF BOVINE TUBERCLE.

The question of the milk-supply was concerned therefore not only with obtaining the milk required for the people of this country but with its purity. It was not only an agricultural problem; it was a human problem. In this country at the present moment there were roughly about 3,000,000 cows giving milk, and of those cows over 1,000,000 were suffering from tuberculosis. The *Veterinary Record* of May last year stated that 40 per cent. of the cows of our dairy herds producing milk for human consumpton were suffering from tuberculosis; that in England 31·5 per cent. of tuberculosis in children up to the age of 15 was of bovine origin; that in England 57 per cent. of enlarged tuberculous glands in the neck and 33 per cent. of bone and joint tuberculosis in children, and in Scotland 90·3 per cent. of glandular enlargements of the neck and 61·2 per cent. of bone and joint tuberculosis, owned their origin to the drinking of contaminated milk. There was in this country at the present moment the greatest orthopædic surgeon the world had ever known, and he estimated the incidence of tuberculous disease of bones and joints from contaminated milk to be 70 per cent. The slaughter of animals showed the same result. In London 33 per cent. of animals slaughtered showed evidence of tubercle, whereas in Dublin only 23 per cent. of the animals killed were tuberculous. If one put a statement of this kind into the language of the laboratory, and if one regarded the problem from that point of view, one would see that first of all the tubercle bacillus was produced; then it was innoculated into a culture medium of the most satisfactory kind, the best medium being the young, active, succulent tissues of a young child; then the culture medium itself was put into an incubator so that it might have every possible facility and all the necessary food for growth. The municipal term for an incubator was a slum. The result was so costly that the nation lost 100 people every day of the year, and spent, as he had said, £250,000 a day in the treatment of tuberculosis. He repeated that the problem was a human problem with which he had had to deal all his life. But it was also in a large measure a financial problem of the first order.

SLAUGHTER OF COWS NO REMEDY.

What was to be done? A milk-supply was very necessary. Were they to slaughter all the cows infected with tubercle? If that were done he thought it would be quite ineffective except so far as the immediate present was concerned, for tuberculosis gave rise to very few signs in some cases in the cow. There were cases where animals have been slaughtered that were supposed to be without blot, and in two cases within his own knowledge, 44 per cent. in one case and 47 in the other were found to be tuberculous. Moreover, the byres and other places where the cows were kept were very often saturated with tubercle. Therefore after slaughtering the animals there would have to be drastic destruction of the infected byres. The cost would be prohibitive. There would be animals overlooked who would soon contaminate their mistals, and before long the disease would be as widespread as before. To immunise the animals would be a matter of great difficulty and great uncertainty. The problem which needed to be considered was first as to whether they could improve the present conditions of milk-supply in this country. He would pay a tribute to the work which was being done at Reading and to the work done by the Earl of Iveagh in connexion with the production of pure milk for human consumption, and at a cost very little above that of ordinary milk sold in the streets of the larger towns and cities. But if it was almost impossible in the present circumstances to produce throughout the country guaranteed tubercle-free milk, what was to be done if milk was still desirable for human consumption? In the first place there was a method of destroying all organisms in milk, a method easily available in any household—namely, to boil the milk. It was a method which cost virtually nothing. Every drop of milk taken into his own house was boiled immediately it was delivered. It was true that certain disadvantages attached to the method of boiling, but the nutritive value of milk, contrary to general opinion, was not in the least diminished by boiling. Dr. Janet Lane-Clayton conducted an inquiry for the Ministry of Health, and came to the conclusion that if there was any alteration in the nutritive value it was in favour of boiling as compared with raw milk. It was true that boiling destroyed the vitamins and reduced the calcium and phosphorous contents, but from the point of view of consumption there was no doubt whatever that while boiling milk reduced its value, at the same time there was an easy method of compensating for the loss of these essential qualities.

PASTEURISATION.

The second method that could be adopted to make ordinary milk fit for human consumption was pasteurisation. In London and Manchester 90 per cent. of the milk was pasteurised. That was why he found indifference among people who lived in London to the severity of the threat of the milk problem. Pasteurisation meant keeping milk roughly at a temperature of 145° F. for 30 minutes. There was no homogenisation or breaking up of the cream, and the milk flavour, in his judgment at any rate, was improved. There was no difficulty in pasteurisation except that it had to be carried out in part by human machinery, and here, as elsewhere, human machinery sometimes broke down. He had figures from Montreal which showed that although the milk was pasteurised, in 1927 there was an outbreak of enteric fever which affected 1755 patients, and there were 453 deaths, whereas in Toronto where 99 per cent. of the milk was pasteurised, and where there was supervision of the men undertaking the work, surgical tuberculosis was no longer a problem. A great deal therefore depended upon the human skill used in the process of pasteurisation. An article appeared in the *Times* about a year ago asserting on very competent authority that pasteurisation had failed in the experience of medical men in London. Pasteurisation was perfectly satisfactory. It destroyed tubercle and any other harmful bacilli; but it was essential that the machinery for carrying it out should be constantly supervised and that as far as possible bacteriological control shoul be exercised at every stage of the procedure. I was most desirable that milk should be produce under conditions which made it as pure as possible. If that was done he (Lord Moynihan) would support Lord Astor's plea for a very largely increased suppl of milk in this country. There was another proces known as sterilisation which consisted in keep milk at a temperature of about 100° C. for ab *25 minutes. That was an immense* advantage so as the use of milk in warmer climates than our ow was concerned, but for us pasteurisation was ce tainly adequate. Sometime ago a very authoritati letter appeared in THE LANCET signed by Lo Dawson, Sir Thomas Horder, and others, advocati that the whole milk-supply of large towns sho undergo pasteurisation, at least before being suppl for human consumption. He thought some furth inquiry than had yet been made should be direct to the milk-supply of this country. The time had co for a Royal Commission, not for the purpose postponing the question but of bringing to the fr all the knowledge so far obtained about the m problem, and to let the public know that milk f *human consumption should* be produced und conditions which made it possible for people to dri it without the grave risks to health which had been prominent in his speech. That might be an ideal and ideals were not so much for capture as pursuit but in his judgment it was an ideal which this nati should steadily pursue.

REGISTRATION OF OSTEOPATHS.

On Wednesday, Feb. 11th, Mr. W. M. ADAMS asked for leave to bring in a Bill to regulate t practice of osteopathy and to prescribe the qualific tions of osteopathic practitioners. He said that t objects of the measure were first—to establish board or council with the necessary authority regulate the practice of osteopathy in *this* count and second to compile a register of practitione of a prescribed standard according to qualificatio The proposed board was of a representative charact dealing with all the representative bodies intereste It was proposed that the Board should have t right, which had been given to other bodies of t kind, *to determine* what were to be the qualificatio entitling a practitioner to be placed on the regis and also that it should have some practical control o the examinations in connexion with those qualific tions. He knew that there was doubt in certa quarters as to whether the practitioners in the oste pathic profession to-day were entitled to these pri leges, and they were frequently reminded that they w charlatans and quacks who were *trespassing* on t privileges of another profession, but it was not mer of one profession that that could be said to-da or at any time in our history, and the probability w that in the building up of the traditions of an profession there had always been those who h been termed interlopers. The privileges that he w asking for professional skilled osteopaths had alre been established in 47 of the United States *of* Americ and in law they were entitled to the same privile as other professions that might be in competition wi them. Osteopathy was a system of health and heal founded on the fact that the body itself could pro the necessary qualities for health and healing provi it was kept in that mechanical adjustment that w essential for hygiene and other necessary conditio That theory was at times contested, and it was sa that it could not be put into practice. If a theory w not established, at least they could keep an op mind and allow the operation of a new health-givin service in this country. In conclusion, he asked t House to grant this privilege to osteopaths becau the claims of the medical profession were sometim in conflict with the newer health giving servic

Dr. FORGAN said that it would not surprise cert members of the House that a member of the me fession should ask the House not to allow this Bill be introduced. It might be said that in the past the dical profession had laid itself open to the accusa-n that they had sought to make themselves a y close corporation, but on calm reflection most ople would agree that the conservative attitude sing that word "conservative" in its best sense—the medical profession towards new methods of atment had probably been beneficial to the mass of community. He would be a rash man to-day who l that every registered medical practitioner had is command the skill and the knowledge that some led osteopaths had, and it was unfortunate that e men with a natural bent—for example a wonder-pair of hands—should be prohibited from exercising t power of health which they might do if they e recognised and their practice regularised. He opposing the introduction of this Bill, not because re was nothing good in osteopathy, but because Adamson was speaking not on behalf of all opaths but on behalf of a section who were tent with a standard of education and training ch in the opinion of many was not a sufficient rantee that if this recognition was given serious takes might not occur The Bill did not seek lay down a sufficiently high standard for those were to be recognised under it. There were in this ntry to-day, osteopaths who have had four, five, and years' training in their subject There were in ost every village in the country bone-setters who some good, and who often did a great deal of harm, he did not want men who had real skill and training sified in the same category as their less fortunate thren.

eave was given to introduce the Bill without a sion, and the Bill was brought in and read a first e.

A PROHIBITION BILL REJECTED.

n the House of Commons on Feb. 13th, Mr. YMGEOUR moved the second reading of the Liquor lic Prohibition Bill, which he said proposed to hibit the manufacture, importation, and sale of holic liquors for beverage purposes. Clause 3 of Bill provided for the supply of alcoholic liquors scientific or industrial purposes, and laid it down t alcohol required for medicinal purposes should supplied only in bottles labelled "poison" by perly qualified medical practitioners or by registered mists. In seconding the motion for its rejection, ut.-Colonel **FREMANTLE** said that the proposals e not only impracticable, but would put a brake those useful, successful, and efficient measures ich were slowly bringing alcoholic excess to an end. **HASTINGS** said there could be no doubt that country would be happier, healthier, and wealthier his Bill was carried out, but he was afraid that t had happened in America would be repeated e. The Bill was rejected by 137 votes to 18—jority against, 119.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 11TH.

Maternal Mortality in Ceylon.

ajor **GRAHAM POLE** asked the Under-Secretary for the nies whether he could give information in regard to rate of maternal mortality among the Indian plantation urers in Ceylon.—Dr. **SHIELS** replied: The rate of ernal mortality among the wives of Indian plantation urers on scheduled estates in Ceylon during the year was 20·6 per 1000 births. The corresponding figures his respect for 1930 have not yet been received.

THURSDAY, FEB. 12TH.

Health and Nutrition Advisory Committee.

r. **FREEMAN** asked the Minister of Health whether, in of their practical experience of matters of health in tion to diet, he would consider the appointment on the lth and nutrition advisory committee a nominee of the ional vegetarian societies or be prepared to consider dence submitted by that body.—Mr. **GREENWOOD** replied: This committee is appointed to advise me on the practical application of modern advances in the knowledge of nutrition, and I cannot entertain the question of adding to it a nominee of any particular societies. I will, however, pass on to the committee my hon. friend's suggestion that they should consider evidence from the societies mentioned.

Lancashire Hospital and National Insurance.

Mr. **FREEMAN** asked the Minister of Health whether the application of the Eccles and Patricroft (Lancashire) Hospital, to be registered under the National Health Insurance Act for the supply of drugs, medicines, and appliances, had been granted.—Mr. **GREENWOOD** replied: These applications are addressed not to me but to insurance committees. I understand that the Lancashire Insurance Committee have felt unable to entertain an application from this hospital on the ground that it does not comply with the statutory conditions governing admission to any list of insurance chemists.

Health Insurance Contributions and Benefits.

Mr. **GORDON MACDONALD** asked the Minister of Health the total contributions of the workers to health insurance, and the total health insurance benefits paid, during each of the last three years.—Mr. **GREENWOOD** replied: The amount of the employees' portion of the health insurance contributions and the total amount of health insurance benefits expenditure in Great Britain for each of the last three years are approximately as follows:—

	Employees contributions.	Benefits expenditure.
1928	12,600,000	32,300,000
1929	12,700,000	34,500,000
1930	12,800,000	32,550,000

Sale of Tuberculous Milk.

Mr. **LAMBERT** asked the Minister of Health whether, as under the Milk and Dairies Order, 1926, the sale of milk from tuberculous cows for human consumption was forbidden, he would introduce legislation securing similar precautions with regard to imported milk products.—Mr. **GREENWOOD** replied: Under the Imported Milk Regulations, 1926, imported milk must be free from tubercle bacilli. As regards milk products, I am advised that there is not the same risk from the presence of tubercle bacilli as in the case of milk, and that imported products are in fact no more likely to be infected than milk products of home manufacture. I will, however, consider whether any further measures should be taken to safeguard the public against the risk of tuberculosis from the consumption of milk products.

Royal Veterinary College.

Mr. **ORMSBY-GORE** asked the Minister of Agriculture whether the Government's conditional offer of £150,000 to the Royal Veterinary College was confined to rebuilding on the present Camden Hill site, or would be equally available for acquiring a country site with a farm attached where training and research could be carried on in an environment more suitable than the present site in London.—Dr. **ADDISON** replied: The committee appointed by Mr. Guinness, when Minister of Agriculture, recommended unanimously that the College should be rebuilt on the present site, and that recommendation, of which the grounds are stated in the committee's report, was accepted both by the Government and by the Governors of the College. The Government contribution of £150,000 was therefore offered with a view to reconstruction on the present site.

Mr. **ORMSBY-GORE**: Does the right hon. gentleman regard himself as absolutely bound by the recommendations of this committee if a much cheaper site were available in the country which would be more suitable for the College?

Dr. **ADDISON**: I do not wish to say that I am absolutely bound, but I understand that this report, after very serious inquiry, was quite unanimous on the point.

Lieut.-Colonel **FREMANTLE**: Is it not the case that since that report arterial roads and tube extensions have been made which involve a new consideration in connexion with this proposal?

Dr. **ADDISON**: I do not think that the report was based on the question of transport. Other matters led to these recommendations.

Mr. **PRICE**: Will the right hon. gentleman bear in mind that veterinary research conducted in the middle of London is not exactly calculated to achieve its end?

Dr. **ADDISON**: Of course, veterinary research is being carried on in a very large number of places, many of them outside London.

International Night-Work Convention.

Mr. **FREEMAN** asked the Minister of Labour whether her attention had been called to a recent decision of the governing body of the International Labour Office to revise the convention on night work and to permit women to be so engaged; and whether the British official delegate supported the resolution.—Miss BONDFIELD replied: The governing body decided that the International Labour Conference should consider the desirability of introducing two modifications into this convention, first by inserting an exception for supervisory workers, and secondly by allowing Governments to fix the prohibited period either between 10 P.M. and 5 A.M. or between 11 P.M. and 6 A.M. The first of these proposals originated with His Majesty's Government, and their representative on the governing body supported it, but he voted against the consideration of the second proposal by the conference.

MONDAY, FEB. 16TH.

Indian Medical Department Reserve.

Major GRAHAM POLE asked the Secretary of State for India what was the contemplated establishment of the Indian medical department reserve of sub-assistant surgeons, the formation of which had been sanctioned by the Government of India.—Mr. WEDGWOOD BENN replied: 150 in the first instance.

All-India Medical Council.

Major GRAHAM POLE asked the Secretary of State for India what was the present position in regard to the proposal to establish an all-India medical council.—Mr. WEDGWOOD BENN replied: The Government of India reported on Jan. 27th that the draft of a new Bill for the establishment of an all-India Medical Council was nearly completed.

Mental Department at Liverpool.

Mr. KINLEY asked the Minister of Health how many patients had been transferred from the Mill-road mental department (Liverpool) to other mental hospitals; and whether the transfer had caused overcrowding at the new mental hospital.—Miss SUSAN LAWRENCE replied: My right hon. friend is informed by the Liverpool City Council that, during 1930, 583 patients were transferred from the Mill-road Infirmary to the Lancashire County Mental Hospitals. As regards the second part of the question, my right hon. friend is informed that patients are transferred from the Mill-road Infirmary to any of the county mental hospitals in which there are vacancies. He has no information of any overcrowding in any of the county mental hospitals.

TUESDAY, FEB. 17TH.

Shortage of Service Medical Officers.

Major GLYN asked the Secretary for War whether, as it was necessary to employ 57 temporary and retired officers of the Royal Army Medical Corps and there was a deficiency of 124 of the authorised establishment, he would communicate with the Board of Admiralty and the Air Ministry in order to endeavour to discover the cause of this shortage of medical officers under the present regulations.—Mr. T. SHAW replied: I have this matter under my personal consideration, and am in close touch with my colleagues in regard to it.

Major GLYN: Is the right hon. gentleman satisfied that the conditions are satisfactory as regards medical officers?

Mr. SHAW: No, I am not satisfied that the conditions are satisfactory, but unfortunately the difficulties in the way are not easy to surmount.

Lieut.-Colonel FREMANTLE asked whether this question had not been on the *lapis* for 12 years, and was it not necessary now to take urgent action to deal with it?

Mr. SHAW: There is one word that would solve the whole matter, and that is money, but unfortunately by the provision of money one might do more harm than good in respect to other officers in the forces who are not medical officers.

The Calmette Treatment.

Mr. FREEMAN asked the Minister of Health whether the investigations into the cause of the deaths of 67 children at Lübeck early in 1930 following the Calmette treatment of the Pasteur Institute were yet completed: and if he could obtain a report on the matter.—Miss LAWRENCE replied: My right hon. friend understands that an official report has been made to the German Imperial Health Council concerning these deaths. The council concluded that the deaths were not traceable to the original B C G cultures, but were probably due to some unexplained admixture with virulent tubercle bacilli. The Imperial Council have also confirmed their decision of 1927 that the use of living bacilli, even in an attenuated form, for human prophylaxis is undesirable in the present state of knowledge.

MEDICAL NEWS

University of Oxford.

On Feb. 14th the following degrees were conferred:—

D.M.—C. P. Blacker.
B.M.—J. H. Chitty, W. E. S. Merrett, and F. Bell.

University of Cambridge.

Dr. A. A. Miles and Dr. E. T. C. Spooner have been appointed university demonstrators in pathology for three years.

University of Manchester.

Dr. W. W. Kay has been appointed assistant lecturer in chemical pathology.

University of Glasgow.

Prof. Andrew Hunter has been elected dean of the faculty of medicine for 1931. Bellahouston gold medals have been conferred on Prof. D. F. Cappell and Dr. E. M. Dunlop, and the Macewen medal in surgery on Dr. W. S. Mack.

Royal College of Surgeons of England.

A meeting of the Council was held on Feb. 12th with Lord Moynihan, the President, in the chair. Mr. Victor Bonney was re-elected the representative of the College on the Central Midwives' Board for the ensuing year.

The Fellowship of the College was conferred on Mr. R. W. Reid, of St. Thomas's Hospital, and the membership on 149 candidates, whose names were given in our issues of Feb. 7th and 14th as recipients of the L.R.C.P. (with the exception of S. S. Ahluwalia, W. N. Chalmers, Marjorie Low, M. N. Lunn, E. M. Newham, David Ockham, and E. M. Sharples).

Diplomas in public health were granted jointly with the Royal College of Physicians to 19 candidates, whose names appeared in our issue of Feb. 7th.

The President reported that an election of three Fellows into the Council would take place on Thursday, July 2nd, at 11 A.M., in the vacancies occasioned by the retirement in rotation of Mr. J. Herbert Fisher, Mr. G. E. Gask, and Mr. Graham Simpson; that notice of the election would be given to the Fellows by advertisement and circular on March 6th; that March 16th would be the last day for the nomination of candidates; and that a voting-paper would be sent on March 31st to every Fellow whose address is registered at the College.

History of Science and Technology.

Dr. Charles Singer will preside over the second international congress of the history of science and technology, which will take place in London from June 29th to July 3rd, with the Science Museum as its headquarters. Further particulars can be had from the hon. secretary, Mr. H. W. Dickinson, the Science Museum, South Kensington, S.W.

Neurology and Psychiatry in Vienna.

A fifth intensive post-graduate course in neurology and psychiatry will be held in Vienna from June 30th to July 31st. It will consist of systematic classes in English at Prof. Wagner-Jauregg's neuropsychiatric clinic (now directed by Prof. Pötzl) and at Prof. Marburg's neurological institute. Further particulars may be had from the American Medical Association of Vienna, at Alserstrasse 9, Wien, VIII.

British Institute of Philosophical Studies.

At a meeting to be held at the Royal Society of Arts, 18, John-street, Adelphi, London, W.C., on Feb. 24th, at 8.15 P.M., Prof. John Macmurray will lecture on Modern Civilisation and the Moral Ideal. Three lectures on Biology and Social Life will be given by Prof. Julian Huxley at 5.31 P.M. on University Hall, 14, Gordon-square, W.C., at Tuesdays from March 3rd.

London Hospital Medical College.

The Liddle triennial prize for 1929–30, offered for public competition, has been awarded to Dr. William Evans. The prize is awarded for an essay, and the subject set was the Cause and Incidence of Duodenal Ulcer.

Royal Medical Benevolent Fund Guild.

The women's branch of the Royal Medical Benevolent Fund, commonly known as the Royal Medical Benevolent Fund Guild, has opened 37 new branches within the last two years. There are still, however, many important towns without branches, and Mrs. Keppel Barrett (102, Church-street, Kensington, London, W.8) informs us that she will be grateful for introductions to doctors' wives in provincial centres. Further information about the Guild and its work may be had from the secretary at Tavistock House, Tavistock-square, W.C.1.

niversity of London.

At a meeting of the Court on Feb. 11th a letter was read om the London County Council saying that the council's ock maintenance grant to the University in each of the ur academic years, 1931–32 to 1934–35, would be £125,000. his figure represents an increase of £20,000 on the council's ants for the current year, and of £14,000 on the grant to e university and its colleges in 1929–30.

t. John's Hospital for Diseases of the Skin.

We are asked to state that the out-patient department this hospital (49, Leicester-square, London, W.C.2) is pen daily at 1.30 P.M. and 5.30 P.M. (Saturdays 1.30 P.M. nly). Inconvenience is sometimes caused by practitioners lvising their patients to attend at the hospital in the orning.

ew Woolwich Health Centre.

After cutting the first sod of a new housing estate of 275 res at Eltham on Feb. 14th, Mr. Greenwood, Minister of ealth, opened the new municipal health centre on an adjoing estate. This is a simple one-storey building, surrounding quadrangle, which will serve the needs of school medicine well as of the pre-school group. It includes a hall for ctures and demonstrations, and has cost £5500.

ife County Asylum.

Mr. Adamson, the Secretary of State for Scotland, has ened a new home for the female nurses at the Fife County sylum at Springfield. It provides accommodation for a aff of 81, and was erected at a cost of £26,000.

lasgow Royal Infirmary.

The subscribed income of the Glasgow Victoria Infirmary r the year 1930 was less by £10,109 than the maintenance sts, which it is stated now exceed £67,000 per annum. he average daily number of patients was 383, compared ith 374 in 1929, and the cost per patient was £7 12*s.* 1*d.*, against £8 5*s.* 7*d.* the previous year. A new X-ray plant as been presented and installed, and the Infirmary's supply radium has been augmented during the past year by 0 mg. received on loan from the Radium Institute.

oyal London Ophthalmic Hospital.

The annual dinner of past and present students of Moorelds Hospital was held at the Langham Hotel on Feb. 12th. he chairman was Mr. A. H. H. Sinclair, of Edinburgh. he toast of the Hospital and Medical School was proposed y the chairman; Mr. Luling and Mr. Charles Goulden, e dean, replied. Other toasts were proposed by Mr. R. ffleck Greeves and Mr. R. Foster Moore, and the respondents ere Dr. Watts Eden and Sir Harold Fawcus. The dean presenting his report spoke of the improvements that ere soon to be put in hand by the board of management. he out-patients' department would be much enlarged and nprovements made, whereby the clinical teaching could be arried out more conveniently. The school accommodation ould also be extended as well as the library and laboratories. he hospital itself had been enlarged during the past year, nd there were now wards for private patients. The number students during the year was 160, of whom 98 were new. t the examinations for the D.O.M.S. in February and uly, 1930, of the 64 candidates for the complete certificate 8 passed, and of these 26 had pursued their studies at oorfields.

During the past year Dr. W. Russell Brain has been elected ssistant physician, Mr. G. H. Howells ear, nose, and throat urgeon, and Mr. John Winter dental surgeon. Prof. H. H. Voollard has been appointed lecturer in anatomy.

ugenics Society.

The Galton anniversary dinner was held by the Eugenics ociety on Monday last, Feb. 16th, at the Rembrandt Hotel, ondon, when Sir Arthur Thompson delivered the Galton ecture. After an eloquent eulogy of Galton as the observer ho placed the study of heredity on a scientific plane, the ecturer said that he would venture to criticise the great an in that he was a little too much absorbed by the roblems of heredity, leaving aside those of environment. n a witty and closely reasoned discourse Sir Arthur went on o describe the manner in which insects, especially ants and ees, fishes, and various lowly animals react to the conditions n which they find themselves; but far from taking them as nodels of behaviour, there were, he said, in their conduct f life many things which constituted red flags of warning to uman beings. Gross over-fertility, male parasitism, and abour out of all proportion to results were such flags, and heir existence might form valuable admonition to man o-day. Dean Inge presided over a large company of members f the Society and guests, who recorded at the close a vote f thanks to the Galton lecturer, proposed by Sir Gowland Hopkins, P.R.S., and seconded by Admiral Sir Herbert Richmond.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
Monday, Feb. 23rd.—8 p.m., Odontology. Paper: Mr. A. Hopewell Smith: Evidence Against the Theory of Metabolic Properties of Human Enamel. Casual Communication: Mr. A. Hopewell Smith: The Head of an Egyptian Mummy.
Tuesday.—5 p.m., Medicine. Paper: Prof. I. Snapper (Amsterdam): The Practical Significance of the Protein-content of the Plasma.
Thursday.—8.30 p.m., Urology. Paper: Dr. W. R. Reynell: Sexual Neurosis.
Friday.—8 p.m., Epidemiology and State Medicine. Paper: Dr. P. Manson-Bahr: The Epidemiology of Human Trypanosomiasis.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
Monday, Feb. 23rd.—8.30 p.m., Mr. A. D. Wright: Treatment of Indolent Ulcers of the Leg. (Discussion.)
Wednesday.—9 p.m., Dr. J. W. McNee: The Spleen (Second Lettsomian Lecture.)

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.
Thursday, Feb. 26th.—8.30 p.m., Mr. R. Churchill. The Forensic Examination of Firearms and Projectiles. To be followed by a discussion.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.
Friday, Feb. 27th.—8.30 p.m., Mr. David Lees: Presidential Address. A Discussion will follow.

INTERNATIONAL SOCIETY FOR INDIVIDUAL PSYCHOLOGY, 55, Gower-street, W.C.
Friday, Feb. 27th.—8.30 p.m., Dr. T. E. Lawson: Anxiety States.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
Thursday, Feb. 26th.—5 p.m., Surg.-Capt. S. F. Dudley, R.N.: Some Lessons of the Distribution of Infectious Disease in the Royal Navy. (First Milroy Lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
Monday, Feb. 23rd to Saturday, Feb. 28th.—Medical Society of London, 11 Chandos-street, Cavendish-square, W. Mon., 4 p.m., free lecture by Dr. C. Worster-Drought: The Differential Diagnosis of Organic Nervous Disease from Functional Nervous Disorders.—Royal Waterloo Hospital, Waterloo-road, S.E., Fri., Special Lecture on Special Measures after Abdominal Operations by Mr. Rodney Maingot at 4.30 p.m.—Royal Chest Hospital, City-road, E.C. Free demonstration by Dr. Saxby Willis on Thurs., 3 p.m.—Queen's Hospital for Children, Bethnal Green, E. Free demonstration of Orthopædic Cases in Wards and Out-patient department by Mr. Whitchurch Howell on Thurs. from 2 p.m. to 4 p.m.—Hospital for Tropical Diseases, Gordon-street, W.C. Special post-graduate course in Tropical Medicine. All day.—Further particulars from the Fellowship of Medicine.

ROYAL INSTITUTION, Albemarle-street, W.
Thursday, Feb. 26th.—5.15 p.m., J. B. S. Haldane: Respiration.

NATIONAL HOSPITAL, Queen-square, W.C.
Monday, Feb. 23rd.—12 noon, Dr. Greenfield: Acute Disseminated Encephalomyelitis. 2 p.m., Dr. Riddoch: Out-patient Clinic. 3.30 p.m., Dr. Kinnier Wilson: Spinal Vascular Disease.
Tuesday.—2 p.m., Dr. Walshe: Out-patient Clinic. 3.30 p.m., Dr. Purdon Martin: Vascular Lesion of the Brain Stem.
Wednesday.—2 p.m., Dr. Martin: Out-patient Clinic.
Thursday.—2 p.m., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 p.m., Dr. Walshe: Hemiplegia.
Friday.—2 p.m., Dr. Adie: Out-patient Clinic. 3.30 p.m., Dr. Collier: Neurosyphilis.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
Thursday, Feb. 26th.—9 p.m., Mr. W. I. Doggett: Causes and Treatment of Earache.

UNIVERSITY COLLEGE MEDICAL SCHOOL, University-street, W.C.
Tuesday, Feb. 24th.—5.15 p.m., Dr. Janet Vaughan: Pathology and Treatment of Pernicious Anæmia.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Agar-street, W.C.
Sunday, Feb. 22nd.—10.30 a.m., Mr. E. D. D. Davis: Examination of Nose, Ear, and Throat. 11.45 a.m., Dr. F. H. Young: Old and New Methods in Treatment of Pneumonia.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Public Health Division), Keppel-street, Gower-street, W.C.
Monday, Feb. 23rd.—5 p.m., Mr. T. Dunlop Young: Meat Inspection. 6 p.m., Prof. E. Cathcart: The National Diet.
Tuesday.—6 p.m., Prof. Cathcart: National Diet. (Last Lecture).
Wednesday.—5 p.m., Mr. T. Dunlop Young: Meat Inspection (continued).

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.
Wednesday, Feb. 25th.—4 p.m., Dr. Adolphe Abrahams: Indigestion.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Feb. 27th.—4 P.M., Mr. W. A. Mill: Giddiness.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Feb. 24th.—3.15 P.M. (at the Royal Chest Hospital), Dr. J. Maxwell: Winter Cough.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Feb. 25th.—4 P.M., Dr. W. J. O'Donovan: Tumours of the Skin and Their Treatment.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
THURSDAY, Feb. 26th.—5 P.M., Mr. A. L. Waller: The Treatment of Tumours Associated with Pregnancy and Labour.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Feb. 23rd.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.9.
THURSDAY, Feb. 26th.—3 P.M., Dr. F. L. Golla: Clinical Demonstration.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Feb. 24th.—5 P.M., Dr. J. A. Drake: Leprosy.
THURSDAY, 5 P.M., Dr. J. E. M. Wigley: Leukæmia Cutis. Mycosis Fungoides.

CHADWICK PUBLIC LECTURES.
TUESDAY, Feb. 24th.—8 P.M. (in The Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.), Mr. E. A. Elsby: Silicosis Prevention Methods.

GRESHAM COLLEGE, Basinghall-street, E.C.
TUESDAY, Feb. 24th, and following WED., THURS., and FRI.—6 P.M., Sir G. Newman: Four Lectures on the Programme of the Public Health Service.

ST. MARY'S HOSPITALS, Manchester.
FRIDAY, Feb. 27th.—4.15 P.M. (at the Whitworth-street West Hospital), Dr. Lacey and Dr. Addis: Antenatal Demonstrations.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Feb. 24th.—4.15 P.M., Dr. F. R. Ferguson: Disseminated Sclerosis.
FRIDAY.—4.15 P.M., Mr. C. Roberts: Demonstration of Surgical Cases.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.
FRIDAY, Feb. 27th.—3.30 P.M. (at the Royal Hospital), Dr. Skinner: Nervous Disorders of the Heart.

Appointments

DOBSON, MARJORIE M., M.B., B.S. Lond., has been appointed Resident Medical Officer to the Minehead and West Somerset Hospital.

LAURIE, A. R., M.B., Ch.B. Edin., Radiologist to the Derbyshire Hospital for Women.

MACKAY, G. W. J., M.B., Ch.B. Edin., D.P.M., Medical Superintendent to the Institutions under the Somerset County Council Mental Deficiency Committee.

The Mount Vernon Hospital, Northwood: ADIE, W. J., M.D. Edin., F.R.C.P. Lond., DUKE-ELDER, W. S., M.D. Lond., F.R.C.S. Eng., and WILLIAMS, BERNARD, M.B., B.Ch. Oxon., F.R.C.S. Eng., members of the Hon. Medical Staff.

Certifying Surgeons under the Factory and Workshop Acts: FIDDES, J. C. T., M.B., Ch.B. Manch. (Rayleigh, Essex); NORMAN, B. N., F.R.C.P. Lond., M.R.C.S. (Havant, Southampton); RIDDOLLS, L.R.C.P. Lond., M.R.C.S. (Strensall, North Riding).

Vacancies

For further information refer to the advertisement columns.

Birmingham, Selly Oak Hospital.—Radiographer. £250.

Bootle General Hospital.—Sen. Res. M.O. Also Two Jun. H.S.'s. At rate of £200 and £150 respectively.

Bradford, Municipal General Hospital, St. Luke's.—H.P.'s and H.S.'s. Each at rate of £200.

Cambridge University.—E. G. Fearnside Scholarship for Clinical Research, &c.

Cardiff Isolation Hospital.—Res. Asst. M.O. £150.

Carlisle, Cumberland Infirmary.—Second H.S. Also H.S. to Spec. Depts. Each at rate of £155.

Central London Throat, Nose, and Ear Hosital, Gray's Inn-road, W.C.—Hon. Assts. for Out-patient Dept.

Connaught Hospital, Walthamstow.—Secretary. £400.

Doncaster Royal Infirmary.—H.S. At rate of £175.

Durham County Council.—Asst. School M.O. £500.

East Ham Memorial Hospital, E.—Hon. Ophthal. Surgeon.

Edinburgh Mental Health Services.—M.O. £1000–£1250.

Exeter, Princess Elizabeth Orthopædic Hospital.—Orthopædic Surgeon. £600.

Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.

General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.

Gloucestershire Royal Infirmary and Eye Institution.—2nd H.S. At rate of £120.

Great Yarmouth General Hospital.—Jun. H.S. At rate of £1

Golden-square Throat, Nose, and Ear Hospital, W.—Hon. As Surg. Also H.S. £100.

Gravesend and North Kent Hospital.—Jun. H.S. At rate of £1

Hertford, Borough of.—M.O.H. £800.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £300.

Hull Royal Infirmary.—H.P. for Sutton Branch. At rate of £160.

Ilford, King George Hospital.—H.S. At rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. and H.P. Each at rate of £120.

Isleworth.—District M.O. £110. Also Public Vaccinator.

Leeds University, Department of Pathology and Research.—Lecturer in Pathology. £500.

Leicester Royal Infirmary.—H.S. and Cas. O. Also Second H.P. Each £125.

Liverpool, David Lewis Northern Hospital.—H.S. two H.P.'s Each at rate of £100.

London Hospital, E.—Asst. Obstet. and Gyn. Surgeon.

Manchester, Ancoats Hospital.—Res. M.O. At rate of £150.

Manchester and District Radium Institute, Nelson-street.—Director for Radium Institute.

Manchester Babies Hospital, Burnage-lane, Levenshulme.—Jun. Res. M.O. At rate of £150.

Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—Sen. and Jun. H.S. £1 and £100 respectively.

Manchester Royal Children's Hospital, Pendlebury.—Res. M.O. and Res. Surg. O. Each at rate of £125. Also Two Asst. M.O.'s for Out-patients' Department, Gartside-street. Each at rate of £150.

Manchester, Victoria Memorial Jewish Hospital, Cheetham.—Jun. H.S. At rate of £125.

Margate and District General Hospital.—Res. M.O. £125.

Miller General Hospital, Greenwich-road, S.E.—Res. Surg. O. and Reg. £250.

National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Hon. Officer for Speech Defects.

Newark General Hospital.—Res. H.S. £175.

Newcastle-upon-Tyne Hospital for Sick Children.—H.P. Also Sen. and Jun. H.P. All at rate of £100.

Newcastle-on-Tyne, Royal Victoria Infirmary.—Temporary Med. Reg. and Res. Anæsthetist at rate of £250 and £100 respectively. Also Anæsthetist. £100.

New End Hospital, Hampstead, N.W.—Sen. Asst. M.O. £5 Also Asst. M.O. £350.

Northampton General Hospital.—H.S. Also Two Asst. H.S.'s All at rate of £150.

Norwood and District Cottage Hospital.—Hon. Surgeon.

Nottingham, City Mental Hospital.—Deputy Med. Supt. £6

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.

Poplar, Metropolitan Borough of.—Asst. M.O.H., Tuberculosis Section. £600.

Prince of Wales's General Hospital, N.—Hon. Surg. Reg. £1

Queen's Hospital for Children, Hackney-road, E.—Cas. O. At rate of £100. Also Clin. Asst. 5*s.* per attendance.

Reigate, Borough of.—M.O.H., School M.O. and M.O.H. of Infant Welfare Centre. £800.

Royal Chest Hospital, City-road, E.C.—Clin. Asst. for Out-patient Department.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. At rate of £150. Also H.S. for Country Branch, Brockley Hill, Stanmore. At rate of £150.

St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Sen. and Jun. Hon. Med. Registrars.

St. Thomas's Hospital.—Res. Asst. Phys.

Salford Royal Hospital.—Registrar to Orthopædic Dept. £1

Salisbury, General Infirmary.—Two H.S.'s and H.P. Each £1 Also Hon. Asst. Surgeon.

Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Res. Anæsthetist. £80–£100.

Sidcup, Kent, Queen Mary's Hospital.—Asst M.O. £250.

Society of Apothecaries of London, Water-lane, Queen Victoria-street, E.C.—Four Examinerships.

Southampton, Royal South Hants and Southampton Hospital.—Cas. O. At rate of £180.

Sutton, Surrey, Sutton and Cheam Hospital.—Hon. Radiologist.

Swanley, Kent, Hospital Convalescent Home.—Res. M.O. At rate of £200.

Swansea General and Eye Hospital.—Cas. O. £200.

Tunbridge Wells and Counties General Hospital.—H.S. £1

West London Hospital, Hammersmith-road, W.—H.P., Two H.S.'s. and One Res. Anæsthetist. All at rate of £1

Westminster Hospital, Broad Sanctuary, S.W.—Surg. Reg. £100. Also Obstet. Tutor and Registrar.

Weston-Super-Mare General Hospital.—Res. H.S. At rate of £150.

Winchester, Royal Hampshire County Hospital.—H.P. At rate of £150.

Windsor, King Edward VII. Hospital.—Res. M.O. £200. Also H.S. £100.

Woolwich Metropolitan Borough.—Asst. M.O. for Public Health Department. £600.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Leyburn (Yorks, N. Riding).

NOTES, COMMENTS, AND ABSTRACTS

THE PSYCHOLOGICAL FACTOR IN DELINQUENCY.

AT a meeting held at Friends House, Euston-road, n Jan 23rd, Dr. Isabel Wilson, who occupied the hair, explained that the Committee on Psychological edicine of the Medical Women's Federation had ecently discussed the subject of delinquency. As a esult of this discussion it had seemed reasonable to rrange for a meeting between the committee and ertain probation officers who were interested in a sychological course given for them at the Tavistock linic.

Dr. **MARY BARKAS** (The Lawn, Lincoln) said that here were two points that she would like to hear iscussed: What is being done? and what ought be done for the different types of case with which obation officers have to deal? A certain proportion cases were sent to remand homes or put into supersed occupations; a considerable number did quite ell under those conditions. Psychiatrists found that e difficulty with their patients was often mainly one environment, and nervous disorder might disappear the environment were adjusted. There had been uch dispute about the problem of the existence of oral deficiency. Dr. Barkas thought that there were rtain types of high-grade defectives with a good neral intelligence whose capacity for developing isdom and judgment did not reach beyond the stage reward and punishment. She would like to hear the pinion of probation officers on how these cases sponded to the various methods of treatment. hey seldom benefited much from individual intensive ychotherapy. It seemed that some adjustment the reward and punishment mechanism was what ould lead them towards the best citizenship of which ey were capable. A second difficult type was the ychopathic or neurotic delinquent suffering from sessions, compulsions, anxiety, or morbid fear. hese definitely responded to treatment if it was ailable. But if they were to be treated they needed be in some protected environment while the eatment was going on. Dr. Barkas would like to now how far probation officers found that there was a ck of facilities of this kind. There were very few laces where a child could be sent for this sort of eatment.

Difficulties of the Magistrate.

Mrs. **RACKHAM** (Cambridge) said that in looking ack over 10 years on the bench one of the things which she was most struck was the contrast etween the court as a machine for finding out whether e prisoner was guilty or not, and the court as a achine for finding out anything at all about the risoner. In the first capacity it was very good—not rfect, but as a rule it found out the truth. But—d a very big "but" it was—it was a very ineffective strument indeed when it came to knowing anything out the prisoner, especially about his mind; why did it, whether he was likely to do it again, and w to prevent him from doing it again.

Magistrates found it very difficult to know in what ses to seek expert information. They could not tell om the look of the prisoner—nobody looked his best the dock—and unless he presented an imbecile ppearance the magistrates did not know whether he as a mental case or not.

When was the best time to call for a mental report? was agreed that this was after the case had been roved and before sentence was passed. At that point was possible to obtain the prisoner's record and ometimes to gather useful information from items it, such as the school standard reached and any istory of institutional care.

The question arose: Where was the examination be made? The only place to which a prisoner could e remanded when he was over 16 years of age was rison—a very unsuitable place for a mental examination. The surroundings might be equally bad in the home, where the relatives might be hostile to the whole idea of examination. There was a very great need for some more suitable place to send cases on remand. There were homes for children under 16, but these were very often at the police station or at a poor-law institution, neither of which was ideal for the purpose.

The next question was: Who was to make the examination? There was a difficulty in securing a mental specialist, and the obvious person was the prison medical officer or police surgeon. In a small place he would be a practitioner of the town, who might not have special experience in this work. A further complication was the question of fees. Having taken the trouble and expense to get a report the magistrate did not now know how to act on it. There might be no local facilities whatever for treatment. If the child was to be taken to a child-guidance clinic there must be somewhere for it to live while it was attending. Against all these difficulties there was the temptingly simple alternative of proceeding to penalty.

The Committee on Offences against Children and Young Persons had found cases in which a man had been sent to prison for the same kind of sexual offence 10, 13, and 15 times with a occasional flogging thrown in. It was essential to find some better and more scientific way of dealing with problems of that kind. Another difficulty was that all magistrates did not yet grasp the importance of this kind of mental work. They were apt to regard it either as an attempt to shut people up or as an attempt to undermine and weaken man's responsibility.

Mrs. **STORMONT** (Probation Officer, Gt. Marlborough-street Police-station) spoke on types of delinquent and described her work with shoplifters and prostitutes in the West End.

Mr. **CHINN** (Probation Officer, Birmingham) spoke on the

Inter-relation of the Magistrate, Doctor, and Probation Officer.

There was great need, he said, for coöperation between magistrate, doctor, and probation officer in the treatment of delinquency. It was apparent that there was a growing concern for the right treatment of delinquency, but a wide diversity of opinion as to what constituted right treatment. A small minority of advanced opinion was concerned with the scientific application of expert knowledge to the problem and, on the other hand, traditional repressive measures widely used. In between these two extremes were several experiments, more or less developed, the aim of which was the reformation of the delinquent. Probation represented the community's attempt to reform the offender by a process of re-education in his own environment. Such a process would depend for its success on the coördinated contributions of what might be called the "healing" forces of the community, which would include the magistrate, the doctor, and the probation officer, and it would have to be used with discrimination. Probation should never be used without first taking into account the personal and environmental history of the offender and his physical and mental condition. There was still an impression in the minds of some magistrates that probation might be all very well for children and young persons, but it was useless applying it to adults. It was even exceptional for investigations to be made in children's cases apart from one or two of the large cities children were tried and dealt with forthwith. The only method open to the court needing medical advice was often to remand the offender in custody for an examination by the local prison medical officer, but even where this was done the quality of the advice given might detract from its value and the court soon lost confidence in unsatisfactory reports. Certain local prisons were listed as observation centres and had mental experts on their staffs. Such centres were more often used by the large towns than the rural districts and their scope was limited. The period of observation was bound to be short. The doctor's report might contain an accurate diagnosis of the offender's mental condition, but it rarely contained a practical recommendation and no provision was made for treatment. Treatment, of a sort, might be obtained from the poor-law authority if the offender was destitute or could be made to appear so, and certain obvious cases could be dealt with in the county mental hospitals. There was evidence that the administration of the Mental Deficiency Act was far from satisfactory in many counties.

The number of mental experts qualified to give advice and treatment seemed to be surprisingly small, and they were seldom available outside the large cities. Mental experts too often confined themselves to a diagnosis, and gave no constructive help on treatment.

If the reformative material available was to be used wisely and effectively it was essential to realise the interdependence of the court, the doctor, and the probation officer and to ensure their coöperation.

The Clinic for the Delinquent Child.

Dr. **FLORENCE STACEY-CLEMINSON** (Hull) asked whether a clinic for children would not be better started from the educational side as a school clinic to which the courts could send children rather than in connexion with the children's court. The children would not then be branded. Hull was trying to get the education authority to set up a clinic, but there were financial difficulties. At present, cases were sent to the psychologist attached to University College, but there was no definite clinic.

Mr. **CHINN** said that in Birmingham there was as yet no place to send children for psychological treatment, but it was hoped that one would soon be started by the education authority. It was much better for an outside authority to conduct this than for the court to have its own clinic.

Dr. **WILLIAM MOODIE** (London) said that neither court nor school authority was the proper person to conduct a clinic. The work could not be done by any one individual, either psychologist, doctor, or social worker. These people must be available both separately and together, and they must coöperate. Every child was an individual and at the same time a school child, and had two aspects. One could be dealt with by the doctor, the other must be dealt with by the educational psychologist.

In his work at the Child-Guidance Clinic he had found that the vast majority of delinquency resulted from environmental causes and not from a cause intrinsic in the individual. This introduced a third type of investigation—skilled social environmental investigation. What really seemed to matter was the environmental factor, and by manipulating the environment and the education it was possible to alter the behaviour in the desired direction. He wished to stress the point that the examination of delinquents was not purely a medical question.

A number of probation officers and magistrates took part in the subsequent discussion and contributed their personal experiences. There was very general agreement on the need for increased coöperation between magistrate, probation officer, and doctor, and for the education of public opinion on the very important problem of the psychological aspect of delinquency. It was agreed that further meetings should be held.

VICIOUS CIRCLES IN DISEASE.

IN an address to the Osler Club on Feb. 13th entitled "The Dynamic and the Modern Procedure of Diagnosis," Dr. A. P. Cawadias opened with a tribute to Dr. J. B. Hurry who "with one foot in the grave" had worked on general ideas in medicine. Just before his death Dr. Hurry had asked him to help in the preparation of a new edition of his "Vicious Circles in Disease." The basis of the modern conception of disease, said Dr. Cawadias, was the knowledge of the integration of the human body, which we owe mainly to the work of British physiologists. Man is integrated to respond as a whole to any adequate stimulus by the psychoneuro-endocrinic system. When the response to the environment is perfect, the various organs and functions which constitute man are in equilibrium. This is the condition of health. When adaptation is imperfect, either because the environmental changes are too intense, or the power of adaptability of body or mind is insufficient, disease or functional dissociation results. Each diseased individual represents a chain of morbid events in which four links are to be distinguished. The first is the link of external ætiological factors and represents the modification of environment—invasion of microbes, toxins, meteorological factors, &c. The second is the link of constitutional factors, the third that of psychoneuro-endocrinic syndromes, and the fourth that of the organ syndromes—functional disturbances and anatomical lesions which follow the disturbances of the psychoneuro-endocrinic system. This new conception of the general mechanism of disease is intimately connected with a new procedure of diagnosis, the neo-Hippocratic diagnosis of the person, which determines the four links in the chain of morbid events. A complete collection of Hurry's scientific and other writings was displayed.

UNOFFICIAL AUNTS.

WE have been reminded of the existence in Manchester of a panel of voluntary unofficial aunts (V.U.A.) who are willing to do such useful services as staying in the house in charge of children to enable the parents to go out together for an hour or two; to take children to the doctor, dentist, or hospital; to visit old or feeble people, read to them or play a game with them, and to occasionally give relief to the one in charge; to sew or mend garments. We are told that the V.U.A. are purely voluntary workers who accept no responsibility, but do their best to be of service, although not prepared to replace ordinary domestic labour or trained nursing. The service is done without subscription or payment of any kind. Information is spread by an occasional open meeting such as that to be held at 7, Darley-avenue, West Didsbury, Manchester, on March 27th, at which the Lady Mayoress will preside. Applications for information or help should be addressed to Mrs. E. W. Hardy at that address. (Tel.: Didsbury 3331.)

Births, Marriages, and Deaths

BIRTHS.

GILLESPIE.—On Feb. 8th, at Bentinck-street, the wife of Dr. R. D. Gillespie, of Wimpole-street, W., of a daughter (premature, stillborn).

ROBERTS.—On Feb. 15th, at Fairmead, Formby, to the wife of Dr. E. L. Roberts—twin daughters.

MARRIAGES.

WARNER—ALLSOP.—On Feb. 14th, at All Souls', Langham-place, W., Edwin Charles Warner, M.D., M.R.C.P., of Devonshire-place, W., to Mary Dorothea (Dora), eldest daughter of James Allsop, Esq., J.P., of Putney.

DEATHS.

FELDMAN.—On Feb. 11th, at Hodford-road, Golders Green, Dr. Israel Feldman.

HORNER.—On Saturday, Feb. 14th, suddenly, Charles Julius Horner, M.D., of Orford-road, Walthamstow, aged 67.

RUSSELL.—On Feb. 11th, at The Oaks, Yateley, James Russell, M.D., M.R.C.S., aged 79.

TURNER.—On Feb. 12th, at Ascot, Arthur Ernest Turner, aged 35, of 15, Litchfield-road, Sutton, youngest son and [illegible] Percival Turner, of many years Assistant Manager to 4 and 5, Adam-street, W.C.2.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

NEW MATERNITY WARD AT RAMSGATE.—Dame Janet Stancomb-Wills presided recently at the opening of the new maternity ward she has presented to the Ramsgate Hospital. The maternity department is now a complete hospital in itself, containing 25 cots and beds.

THE LANCET COMMISSION ON NURSING

FIRST INTERIM REPORT.

1. A COMMISSION was appointed in December, 1930, o inquire into the reasons for the shortage of candiates, trained and untrained, for nursing the sick in eneral and special hospitals throughout the country, nd to offer suggestions for making the service more ttractive to women suitable for this necessary work.

The members of the Commission are :—

The Earl of CRAWFORD and BALCARRES, P.C., K.T., R.S. (Chairman).

Prof. HENRY CLAY, M.A., D.Sc., late Professor of ocial Economics in the University of Manchester.

Miss R. E. DARBYSHIRE, R.R.C., Matron, University ollege Hospital.

Miss L. CLARK, M.B.E., R.R.C., Matron, Whipps ross Hospital.

Dr. ROBERT HUTCHISON, F.R.C.P., Physician to the ondon Hospital and to the Hospital for Sick Children, reat Ormond-street.

Prof. F. R. FRASER, M.D., F.R.C.P., Professor of Medicine in the University of London, Physician to t. Bartholomew's Hospital.

Mr. A. LISTER HARRISON, J.P., Chairman, Committee of Management, Metropolitan Hospital.

Miss M. D. BROCK, O.B.E., M.A., Litt.D., Headmistress, the Mary Datchelor Girls' School.

Mrs. OLIVER STRACHEY, Chairman, Employments ommittee, London Society for Women's Service.

Miss EDITH THOMPSON, C.B.E., Member of Council, Bedford College, University of London.

Sir SQUIRE SPRIGGE, M.D., F.R.C.P., the Editor of HE LANCET, with Dr. M. H. KETTLE, an assistant ditor, as honorary secretary.

2. The Commission held its first meeting on Dec. 8th to discuss procedure. It was decided that he first duty of the Commission was to obtain vidence whether an absolute shortage of candiates for nursing the sick in institutions really xists, or whether the shortage is only that of candiates with educational qualifications and personal ualities which are likely to enable them to make atisfactory nurses. It was also considered necessary o ascertain : (1) Whether the shortage relates to andidates for training, or to trained nurses for staff ppointments, or to both these categories. (2) Whether he shortage is felt in hospitals approved as training chools by the General Nursing Councils of England nd Wales, Scotland and Ireland, as well as by those ot so approved.

3. It was agreed that a questionnaire should be repared and should be sent to the responsible uthorities of all hospitals approved as training entres and to a number of other hospitals not so pproved. At the same time, it was agreed to ask ther questions, the answers to which might at least rovide a basis for discussion, and at best show learly what conditions can be correlated with a waiting-list and what with a pronounced shortage. It was realised that among hospitals giving equally good training, the variables influencing the position might include the geographical position of the hospital, its accessibility, its prestige, its size, and the amenities offered to nurses undergoing training, as well as many ther factors. Among hospitals not approved as training centres an even larger number of variables exist. Some of these, it was hoped, might prove to be correlated with greater or less difficulty in securing recruits.

Nature of Questionnaire.

4. A Subcommittee was appointed to draft a questionnaire which was divided into a single sheet (questions 1–12) sent to all the hospitals approached, and a double sheet (questions 13–36) sent only to hospitals approved as training centres. For convenience, paper of ten different colours was used for the questionnaires addressed to different groups of hospitals which were classified :—

(A) According to the groups approved by the General Nursing Councils (Complete, Affiliated, Associated, Reciprocal, Children, Fever, Mental).[1]

(B) According to the simpler classifications of General, Special (excluding tuberculosis) and Tuberculosis among the non-approved hospitals. The last-named group was separated from the other special hospitals since there was reason to believe that the staffing of hospitals and sanatoriums for tuberculous patients was a specially acute problem.

The method of selecting a fairly representative sample of the non-approved hospitals had then to be chosen. Various methods of selection were considered and discarded as unsatisfactory. It was eventually decided to send questionnaires to all hospitals, whether voluntary or municipal, situated in counties with names beginning with C, S, K, or M, being the initial letters of the names of the officers of the Commission. The lists from which these hospitals were taken were based upon information supplied in well-known reference books.[2] Questionnaires were also sent to a few hospitals in other counties for special reasons. In view of the possibility that tuberculosis hospitals and sanatoriums find greater difficulty in obtaining recruits to their nursing staffs than any other type of hospital, questionnaires were sent to 124 such institutions throughout the country. These institutions were selected at random, by pricking four institutions on every page of the Ministry of Health Memorandum 122 D/T.

Altogether 1257 of these questionnaires were sent out, distributed according to the tables set out below.

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[1] *Complete training schools* are those which have satisfied the General Nursing Council that medical, surgical, gynæcological, and children's diseases services are provided. At least one resident medical officer must be kept, the period of training must be not less than three years, and the ratio of medical to surgical beds must not exceed 2 : 1, or be less than 1 : 2.

Affiliated Hospitals are not considered sufficiently large to give a complete training, but may be affiliated to a complete training school. Four years' training is here compulsory, two years being spent in the affiliated hospital, at the end of which the preliminary state examination is taken. Having passed this examination, the probationer goes to the larger hospital for two years.

Associated Hospitals.—(1) Hospitals deficient in one branch of training may, in order to supply that branch, associate themselves with another hospital which must have a resident medical officer. The combined period of training must extend over three and a half years. (2) A hospital for men only may associate itself in this way with a hospital for women only and one for children only, when the course may extend over four years.

Reciprocal Hospitals.—Reciprocity between special and general hospitals involves two years in an approved special hospital and two years in a general hospital. Training in the special hospital must include the subjects of the preliminary State examination.

[2] These lists may be incomplete. Hospitals in counties with names beginning with C, S, K, or M which have not received questionnaires are asked to communicate immediately with the Hon. Sec. at THE LANCET Office.

Of these, Tables A and B include *all* the hospitals approved as training schools by the General Nursing Councils of England and Wales, Scotland and Ireland, while Table C includes only the sample of hospitals not approved as training schools to which questionnaires have been sent.

Hospitals to which Questionnaires were Sent.

TABLE A.—GENERAL REGISTERS (G.N.C.).
HOSPITALS APPROVED AS COMPLETE TRAINING SCHOOLS.

—	General.	Affiliated.	Associated.	Reciprocal.
England and Wales	304	68	25	34
Scotland	28	9		
Ireland	16	8		

TABLE B.—SPECIAL REGISTERS (G.N.C.).
HOSPITALS APPROVED FOR SPECIAL TRAINING.

—	Children.	Fever.	Mental.
England and Wales	22	75	119
Scotland	3	17	19
Ireland	2	4	9

TABLE C.—HOSPITALS NOT APPROVED AS TRAINING SCHOOLS TO WHICH QUESTIONNAIRES HAVE BEEN SENT.

—	General.	Special.	Tuberculosis.
England and Wales	181	85	124
Scotland	24	18	
Ireland	44	19	

6. It was, however, realised that statistical evidence cannot alone provide a solution of the problem, especially since the quantity of the applicants may suffice and yet the quality may be poor. Ample space was, therefore, provided on the questionnaire for opinions on the reasons for the shortage, and this section has indeed supplied most helpful material. It was noticeable that where the presence of a waiting-list was reported, the responsible officer who filled up the form (the matron or, in some cases, the medical superintendent) nearly always suggested reasons for the shortage which was understood to exist in other hospitals less favoured. Although individual hospitals report no shortage, nowhere has serious doubt been expressed of the fact that a shortage exists.

7. A second meeting of the Commission was held on Jan. 19th, 1931, when it was reported that already some 250 replies had been received. It was then decided to subject the whole of the material to statistical analysis. Prof. Major Greenwood, F.R.S., Director of the Department of Epidemiology and Vital Statistics at the London School of Hygiene and Tropical Medicine, kindly agreed that this work might be done for the Commission in his Department under the supervision of Mr. A. Bradford Hill, D.Sc. In order that the Commission should have an early indication of the directions in which their further inquiries could usefully be extended, Dr. Bradford Hill was asked to make a preliminary report on the material in certain groups returned up to Feb. 15th. It was decided to ask him to begin with the analysis of the answers to questions 1–12—the shorter questionnaire: (1) from the *general* hospitals approved by the General Nursing Council of England and Wales, and (2) from *general* and *special* hospitals not so approved. The analysis of the answers to questions 13–36 and of the returns from the other groups is proceeding as fast as possible.

8. Dr. Bradford Hill's preliminary report was submitted at the third meeting of the Commission held on Monday, Feb. 23rd, and it was then decided to publish it as an interim report of the Commission in order that its implications might be available for the large number of associations and individuals who have manifested interest in the progress of the work of the Commission. Dr. Bradford Hill's reports on the returns from other groups will be published shortly.

The Questionnaire.

9. The following covering letter was addressed by the Chairman of the Commission to the Chairman of the Governing Body of each hospital:

Offices of THE LANCET,
7, Adam-street, W.C.2.
January, 1931.

THE LANCET COMMISSION ON NURSING.

SIR,—The members of this Commission are anxious to explore the extent of the shortage of applicants for hospital vacancies, both as regards probationers and staff nurses in different parts of the country. One object of the Commission is to suggest methods of recruiting the most suitable candidates. At the same time it is desirable to ascertain the general conditions of service, and also in the case of probationers the nature and extent of training afforded.

In order that our inquiry may be based upon accurate information, we wish to appeal for the help of hospital authorities. A questionnaire is enclosed, and we should be obliged if you would be so good as to invite the Matron or some other responsible person to fill up the form, and perhaps you will return it to us as soon as possible.

While my colleagues are reluctant to increase the burdens of officials whom we know to be seriously pressed for leisure, we none the less hope that we may receive their friendly collaboration, in view of the far-reaching importance of the subject.

I am, Sir, yours faithfully,
CRAWFORD AND BALCARRES,
Chairman.

QUESTIONNAIRE ISSUED BY THE LANCET COMMISSION ON NURSING, JANUARY, 1931.

1. What is your full establishment of A, Sisters; B, Staff Nurses; and C, Probationers?
2. What number of A, B, and C have you working at the present time?
3. Have you a waiting list for vacancies (A, B, and C)?
4. If not, do your advertisements for A, B, and C usually bring sufficient replies from suitable candidates?
5. At what age do you admit probationers?
6. What are the educational requirements for acceptance of a probationer (seventh standard, secondary education, school-leaving certificate, matriculation, etc.)?
7. May we have a copy of: (*a*) The rules sent to prospective candidates if not identical with (*b*)? (*b*) The rules handed to nurses?
8. Is a separate bedroom provided for each probationer?

9. Have you found it necessary to employ "temporary nurses"? If so, how many are working in the hospital at the present time?

0. How many domestic workers (orderlies, ward maids, or daily workers) are employed on ward duty only?

1. What is the average number of beds occupied per night over a year?

2. Please state briefly below what you believe to be the reasons for any shortage of B (staff nurses) and C (probationers), and suggest measures which might relieve it.

3. May we have a copy of the training school prospectus?

4. How many probationers did you admit in: 1928, 1929, and 1930?

5. How many candidates passed the final S.R.N. last year?

6. Of the nurses who failed to complete their training in 1928, 1929, and 1930, how many left—during their first year, during their second year, and during their third year—as a result of: (*a*) ill-health; (*b*) marriage; (*c*) failure to pass examinations; (*d*) sickness at home; and (*e*) other causes?

7. What is the length of the training course?

8. Do probationers have to undertake to work for the hospital for a year after completion of training?

9. How much (if any) fee or deposit has to be paid by probationers on starting training?

0. How much are probationers and trained staff paid: (*a*) first year; (*b*) second year; (*c*) third year; (*d*) staff nurses, if different from third year nurses; (*e*) sisters?

1. Are you affiliated to a superannuation scheme? If so, is membership compulsory?

2. Is there a separate uniform and laundry allowance? And if so, how much? (*a*) Laundry allowance; (*b*) uniform allowance.

3. Are outdoor uniforms compulsory? If so, are they provided?

4. Have you any facilities for exercise and recreation?

5. Are common-rooms provided?

6. Are men guests admitted?

7. Is smoking permitted in any part of the nurses' home?

8. Have the senior nurses a latch-key?

9. What time must nurses be back without a late pass?

0. Is attendance at meals compulsory even when meal-times are adjacent to off-duty hours?

1. What are the duty hours of nurses? By day; by night.

2. What are hours off for meals? Breakfast, early lunch, lunch, tea, supper.

3. Off-duty times and holidays: (1) Daily; (2) fortnightly; (3) weekly; (4) yearly.

4. Notice in advance of off-duty times and holidays: Hours off; day off; annual holiday.

5. Night duty: Stretch of night duty; nights per month off duty for night sister, staff nurse, probationer. Are night nurses relieved at night for meals?

36. Lectures: Time of day? In off duty? In duty time?

Much evidence has already been submitted to the Commission by those interested in its work from various points of view. Any organisation or individual wishing to provide evidence for the Commission to consider, or to make proposals relating to the improvement of conditions of service of the nursing profession, is asked to communicate before March 15th with the hon. secretary at THE LANCET Offices, 7, Adam-street, Adelphi, London, W.C.

Questionnaires still outstanding are urgently needed for the completion of the analysis. Their immediate return would greatly facilitate the work of the Commission.

FIRST INTERIM REPORT.

STATISTICAL ANALYSIS OF THE SHORTER QUESTIONNAIRE

[QUESTIONS 1 TO 12]

ISSUED TO HOSPITALS BY THE LANCET COMMISSION ON NURSING.

BY A. BRADFORD HILL, PH.D., D.SC.

Introduction.

For the purposes of this preliminary examination there have been chosen for comparison two main groups of hospitals:—

(1) Those approved by the General Nursing Council for complete training in General Nursing; and

(2) Hospitals not approved as training centres.

These two main groups have been further subdivided as follows:—

(1) Approved for Complete Training in General Nursing:

- (*a*) London Voluntary.
- (*b*) Provincial Voluntary.
- (*c*) London and Provincial Municipal.

(2) Hospitals not approved:

- (*a*) General hospitals.
- (*b*) Special hospitals (e.g., orthopædic, ear, nose, and throat).

The latter group is a sample of those throughout England and Wales selected in the manner described (Par. 5) in the statement by the Commission. The statistics throughout relate only to hospitals situated in England and Wales. Returns have been secured also from hospitals in Scotland and Ireland, but these, together with the returns from special hospitals approved as training centres (for the State examinations for Sick Children's nurses, Fever nurses, and Mental nurses), have been held over for later analysis. The present study does not include all the hospitals of the particular type to which the questionnaire was sent. Not all the returns are yet to hand, but in each case the analysis includes at least half of those from which it is hoped to secure information (vide Table I.). By a preliminary analysis it was hoped to secure some indications of the factors to which particular attention should be paid when the data from further groups of hospitals are dealt with (e.g., sanatoriums and mental hospitals), while the publication of these results, it was hoped, would lead to helpful suggestions as to further methods of statistical study. The examination has been confined to a short set of questions (1 to 12 on the questionnaire) which were asked of all these hospitals; questions 13 to 36 dealing with many other factors—such as salaries, hours, theoretical teaching—were put only to the approved training schools, and their answers to these questions are now being studied.[1]

TABLE I.

Type of hospital.	Number of hospitals to which questionnaire was sent.	Number of questionnaires so far returned and analysed.	Number analysed as percentage of total sent out.
Hospitals approved as training schools— London Voluntary ..	36	27	75%
Provincial Voluntary	164	106	65%
London and Provincial Municipal ..	104	70	67%
Hospitals not approved as training schools— General	181	91	50%
Special	85	50	59%
Total	570	344	60%

Evidence of Shortage of Nursing Staff.

Evidence as to the extent to which difficulties are met with in securing a suitable staff is provided in the replies to question 4, "do your advertisements for sisters, staff nurses, and probationers usually bring sufficient replies from suitable candidates" (in conjunction with question 3, relating to waiting-lists). How these types of hospitals compare in this respect is shown in Table II. Taken as a whole it will be observed that one-fifth of them fail to secure suitable candidates as sisters and, roughly, one-half of them fail to secure the staff nurses and probationers of the standard that they require. Taken thus, as a whole, the difficulty is most pronounced in the case of staff nurses. There are, however, fairly distinct differences between the groups of hospitals. The position is obviously least acute amongst the London voluntary hospitals, though even here one-third are unable to find suitable staff nurses and one-quarter have difficulty in engaging probationers. As regards probationers, however, the shortage is most marked amongst the hospitals which are not approved as training schools. One-third of these, too, cannot easily find the sisters they require. The municipal hospitals in comparison with the provincial voluntary hospitals seem to have more difficulty in securing staff nurses. In all the classes of institution under discussion the difficulties of obtaining an adequate and suitable nursing staff appear to be considerable. Taking all the groups together it was found from the replies that at least half have had to employ temporary nurses (that is apart from occasional use in sickness or holiday times).

TABLE II.

PERCENTAGE OF HOSPITALS* IN EACH GROUP THAT REPLIED "NO" TO THE QUESTION: "DO YOUR ADVERTISEMENTS USUALLY BRING SUFFICIENT REPLIES FROM SUITABLE CANDIDATES."

Type of hospital.	Sisters.	Staff nurses.	Probationers.
Hospitals approved as training schools— London Voluntary ..	4% (26)	36% (25)	26% ([illegible])
Provincial Voluntary	13% (99)	53% (87)	42% ([illegible])
London and Provincial Municipal ..	17% (42)	68% (65)	33% ([illegible])
Hospitals not approved as training schools— General	31% (67)	76% (60)	50% ([illegible])
Special	30% (40)	30% (33)	57% ([illegible])
Total	20% (274)	58% (270)	44% (278)

* In all these Tables the percentages are not necessarily based upon the total number of hospitals in the group as given in Table I. In some cases the question may not have been answered, in others it may not be applicable. The figures given in brackets in each Table indicate the number of hospitals upon which the percentages are based. For example, the Total figures under the heading "Sisters" mean that out of 344 questionnaires returned and analysed up to Feb. 15th (see Table I.) 274 replied to the question "Do your advertisements usually bring sufficient replies from suitable candidates," and of those 274, 20 per cent. said "No."

Lowest Ages of Admission for Probationers.

As regards lowest ages of admission (Table III.) the bulk of the hospitals not approved as training schools are prepared to accept probationers at 17 and 18. The approved training schools refuse to accept candidates as young as 17 years, and the London voluntary hospitals only in very few cases accept candidates before 19 years of age. In the provinces and in the municipal hospitals quite a large proportion are accepted at age 18 (especially in the municipal hospitals), and the remainder at age 19.

TABLE III.

LOWEST AGES OF ADMISSION.

—	Hospitals approved as training schools.			Hospitals not approved as training schools.	
	London Voluntary.	Provincial Voluntary.	London and Provincial Municipal.	General.	Special.
17 yrs.	—	—	—	18%	39%
18 ,,	15%	36%	49%	66%	54%
19 ,,	52%	61%	44%	15%	7%
20 & 21 ,,	33%	3%	7%	1%	—
Total ..	100 (27)	100 (106)	100 (70)	100 (77)	100 ([illegible])

Educational Standard Required.

The only striking difference in educational requirements (Table IV.) is that between the municipal hospitals and the other four types of institution, whether raining schools or not. The municipal hospitals do not nsist to the same extent upon secondary education, nd in two-thirds of them candidates of "7th standard" vel are accepted. Only one-quarter of them aim t recruiting candidates with a secondary education hile in the other classes this proportion is over hree-quarters. It may be of interest to observe that early one-quarter of the institutions in these five lasses reply that their desire is "secondary education *possible*"; the conditional clause suggests that to btain sufficient staff they have to be content with a wer standard—evidence of a shortage of quality as ell as of quantity.

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[1] Questions 13 to 36 were put also to tuberculosis hospitals and sanatoriums.

TABLE IV.

EDUCATIONAL STANDARD REQUIRED.

—	Hospitals approved as training schools.			Hospitals not approved as training schools.	
	London Voluntary.	Provincial Voluntary.	London and Provincial Municipal.	General	Special
condary or natriculation r school-leavng certificate	57%	63%	7%	55%	64%
condary if ossible	23%	21%	20%	22%	14%
h standard ..	—	14%	66%	13%	10%
o definite equirements ..	20%	2%	7%	10%	12%
Total ..	100 (26)	100 (106)	100 (70)	100 (83)	100 (42)

Accommodation.

The approved training schools provide separate edrooms (Table V.) for at least three-quarters of eir probationers; in the hospitals which are not aining centres the proportion falls to just over half.

TABLE V.

PROVISION OF BEDROOMS.

—	Hospitals approved as training schools.			Hospitals not approved as training schools.	
	London Voluntary.	Provincial Voluntary.	London and Provincial Municipal.	General	Special
ll or very early all, eparate ..	78%	73%	83%	55%	58%
ut separate ..	22%	27%	17%	45%	42%
Total ..	100 (27)	100 (106)	100 (70)	100 (87)	100 (47)

Provision of Wardmaids.

As regard the provision of wardmaids (Table VI.) nd therefore the reduction of "menial work" by he nursing staff, the London voluntary hospitals have more wardmaids per average occupied beds than the other training schools. Very few of the former have more than 20 beds,[2] per wardmaid. In the groups of provincial voluntary and municipal hospitals, on the contrary, about one-quarter have more than 20 beds to a wardmaid. The non-approved general and special hospitals differ widely amongst themselves. A high proportion have one wardmaid to each 20 or fewer beds (though this may be illusory, the wardmaids being part-time workers and having other duties) while, at the other extreme, one-fifth of the general hospitals and one-tenth of the special apparently provide no domestic help at all in the wards (though again they may do so with part-time workers).

TABLE VI.

NUMBER OF BEDS PER WARDMAID.

—	Hospitals approved as training schools.			Hospitals not approved as training schools.	
	London Voluntary.	Provincial-Voluntary.	London and Provincial Municipal.	General	Special
Under 10 beds	5%	—	13%	33%	23%
10–20	85%	68%	63%	41%	47%
20–30	10%	32%	24%	6%	20%
No ward domestic staff ..	—	—	—	20%	10%
Total ..	100 (20)	100 (80)	100 (32)	100 (75)	100 (40)

Number of Beds in Relation to Nursing Staff.

The ratio of beds to total nursing staff (sisters, staff nurses, and probationers) is lowest in the voluntary hospitals (Table VII.). Both in London and the provinces the voluntary hospitals approved as

TABLE VII.

NUMBER OF BEDS PER NURSING STAFF.

—	Hospitals approved as training schools.			Hospitals not approved as training schools.	
	London Voluntary.	Provincial Voluntary.	London and Provincial Municipal.	General	Special
1·0–	58%	6%	—	24%	19%
2·0–	42%	91%	5%	59%	31%
3·0–	—	3%	29%	12%	25%
4·0–	—	—	52%	5%	11%
6·0 and over	—	—	14%	—	11%
Total ..	100 (26)	100 (100)	100 (42)	100 (80)	100 (44)

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[2] Here and elsewhere "beds" indicates average number of occupied beds and not total number of beds available.

training schools provide in nearly every case under examination one "nursing staff" to less than three beds. The municipal authorities, on the other hand, work rather to the ratio of between three and six beds to every one of nursing staff. The difference is quite distinct, and the answers to the previous question do not suggest that the provision of ward-maids has any bearing upon the question. The non-approved general and special hospitals tend to work to the ratio of the approved voluntary hospitals—i.e., one of nursing staff to every one or two beds.

Conclusion.

How much these various factors affect the supply of candidates it is difficult to say. They are probably so inter-correlated one with another and with the many other questions that have yet to be considered that alone each may not appear to have any distinct influence. That many of these factors *are* influencing the supply of candidates is certainly the belief of many of the persons who filled up the questionnaire as shown by their replies to question 12, "what do you believe are the reasons for the shortage."

Summary of Opinions on the Shortage of Candidates. Answers to Question 12.[3]

The reason most often put forward is the obvious one of the much wider sphere of women's work to-day. Many other occupations, it is said, offer better salaries and better prospects, with more freedom, more social amenities, and without the restrictions and long hours of institutional life. On the solution of these difficulties there is no agreement. Some advocate "living out," while others say that it would be "fatal to the profession." Superannuation schemes are advocated by some that have not already adopted them; others favour the reduction of "menial work," and that off-duty hours should be so fixed that the nurse should be able to make social engagements and be reasonably sure of being able to keep them. In addition the off-duty hours should not be taken up by lectures. How much these factors are actually operative may be seen when attention is paid to the more extended questionnaire.

A number of the smaller hospitals, both general and special, attribute their difficulties to the fact that the training gained in them counts for nothing when entering an approved training school; that therefore the probationers are naturally attracted to the large training schools. There should be, in their opinion, coöperation with the cottage hospitals for preliminary training.

Not many of those questioned believe in any lowering of the present educational standards demanded, but a number refer to the difficulties and disadvantages of combining ward work and theoretical work, which, in their opinion, makes the life of the probationer too arduous. To obviate this difficulty, preliminary training schools for some months before entering the wards are proposed. These would have the additional advantage of overcoming a problem continually put forward—viz., the gap between school-leaving age and the age at which the hospitals wish to recruit their staff. The education authorities, it is suggested, might coöperate with the hospitals in the provision of schools for this preliminary training in the theory of the General Nursing Council's syllabus. At present training may take place when the probationer is too tired to take advantage of it. Alternatively it is suggested that recruitment at an earlier age to children's hospitals might be possible.

After training some of the difficulty is due to the fact that the staff nurse regards her position as merely a stepping stone and immediately seeks a sister's post. "No good nurse," reports one, "wants to remain a staff nurse any more than a medical wants to remain a house surgeon." She is not likely to seek work in a small cottage hospital in which promotion is slow and whose certificate of efficiency is not recognised as a qualification. Some signatories deplore this desire for speedy promotion and believe that a year as staff nurse should be insisted upon; bound up with this is the opinion often given that, relative to the probationers, the trained staff are underpaid and that their status should be radically revised. One suggestion of some interest is that they should be afforded opportunity for taking responsibilities, for instance, by representation on the Committee of Management. The attractions of private nursing, of the public health services, of special branches, and of nurses coöperations that give better pay are all cited. On the other hand, some of the special hospitals find that nurses are disinclined to take up their specialised forms of nursing without such extra pay.

Finally, in the opinion of an appreciable number the shortage of candidates is due only to the fact that the profession is judged by the conditions of the past and not by those of the present. An "erroneous idea of overwork, underfeeding and underpay," exists and "exaggerated reports of treatment by seniors" remain in the minds of possible candidates and their parents. It is believed that these opinions could be corrected by suitable propaganda in schools and in the press.

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[3] The answers to this question will, of course, be individually considered by the Commission when the full returns have been analysed.

ADDRESSES AND ORIGINAL ARTICLES

THE TREATMENT OF INDOLENT ULCER OF THE LEG.*

By A. Dickson Wright, M.S. Lond., F.R.C.S. Eng.,
ASSISTANT DIRECTOR OF THE SURGICAL UNIT, ST. MARY'S HOSPITAL; ASSISTANT SURGEON TO THE PRINCE OF WALES'S HOSPITAL, LONDON.

I estimate roughly that there are at least a quarter of a million cases of indolent ulcer of the leg in the United Kingdom. These ulcers cause a great deal of suffering and disability in women and a great loss in wage-earning capacity in men. The yearly cost of the ulcers to patients, the State, and the benevolent societies and institutions must make a colossal figure. I know that the certification under the National Health Insurance runs into a very large annual amount although the majority of the sufferers are outside the insured class.

I have taken at random ten average cases of working men under treatment, and made a rough calculation of the all-in cost of their ulceration. This reaches the figure of £12,000. It is thus seen that there is an economic side to the disease which alone should attract the attention to it that it deserves but does not receive.

Apart from the economic side, indolent leg ulcer is a loathsome condition, and with its long duration, fœtor, pain, sleeplessness, and mental irritability makes the sufferers (to say the least of it) uncongenial to those around them. At times these ulcers produce a degrading mental attitude whereby the patient clings to the ulcer as a means of livelihood in a poor-law institution, or at the expense of relatives, or again occasionally there is a feeling on the part of the patient that complete closure of the ulcer means death, a fallacy fostered by the vendors of ineffective nostrums.

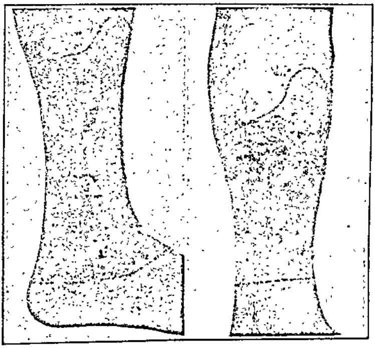
Causes of Gravitational Ulcer.

Indolent ulcer of the skin is almost entirely confined to a very definite area of the body, as definite as that in which peptic ulcer occurs in the stomach and duodenum. In the latter there is a chemical cause for the distribution and in the former a mechanical cause. The area is well shown in Figs. 1 and 2, the first the leg of a woman who has always worn shoes and the second of a man who has always worn boots. The ulcer-bearing area is clearly marked out by pigmentation, eczema, and ulceration, and it will be observed that the lower boundary is the upper limit of the footwear and the upper boundary is an oblique line higher in front than behind and approximately at the junction of upper and middle thirds of the leg. One never sees ulcers below this area except in those who do not wear shoes or boots. The reason for the oblique upper border lies in the poorer vascularity of the tissues overlying the tibia. When vascular equilibrium is disturbed in the leg from any cause, then gravity produces its maximum effect in this ulcer-bearing area, and indolent ulcer of the leg is another price man has to pay for the assumption of the erect position.

Vascular equilibrium in the leg (and also lymphatic and tissue equilibrium) can be lost from a number of causes of which the deranged circulation in varicose veins is the commonest; hence these ulcers, whatever their cause, are almost universally known as "varicose" ulcers—an obvious oxymoron. I propose here the name of *gravitational ulcer* as a more logical and satisfactory term indicating the cause and also the line of treatment which will surely lead to success.

Conditions which will lead to loss of vascular equilibrium are: (1) *Occupation*, involving long hours in the standing position. (2) *Pregnancy*, with its increase in venous pressure in the legs. (3) *Venous obliteration* of all kinds, of which the commonest are the post-operative, post-typhoid, and puerperal femoral thromboses. (4) *Lymphatic obstruction.* (5) Severe *trauma* to the legs followed by long rest in bed as in fractures. (6) *Ankylosis* of joints, especially the hip producing, as it does, diminution of muscular activity and extension of the leg while sitting. I have three cases in my series from this cause. (7) Senile *vascular changes* affecting veins rather than arteries. I have many cases in which this can be the only cause. (8) *Varicose veins.* Owing to the loss of function of one or more of the some 14 valves which guard the deep veins the blood flows downwards in the superficial varices and has to be picked up in the feet and returned again by the deep veins. So a vicious circle arises, and I have found that a dye injected into the general circulation only attains a fraction of the concentration in the varicose veins that it reaches in the rest of the body. So also the blood in the varicose veins contains only two-thirds of the usual amount of oxygen, and a higher concentration of carbon dioxide. Changes in plasma proteins, and lactic acid content have been shown, and I have discovered changes in the osmotic pressure. So no proof is lacking that the lower part of the leg afflicted with varicose veins is in a constant state of asphyxial engorgement while in the upright positions. (9) The venous stagnation of the legs of young women, of seasonal incidence, producing the condition known as *Bazin's disease.* (10) The *bodily habitus* is of considerable importance, the obese and the very tall have for very obvious mechanical reasons more trouble in securing adequate venous return from the legs.

Fig. 1. Fig. 2.



The ulcer area in a case where shoes are always worn.

Higher level of ulcer area in a man who always laces his boots tightly.

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* An address given before the Medical Society of London on Feb. 23rd.

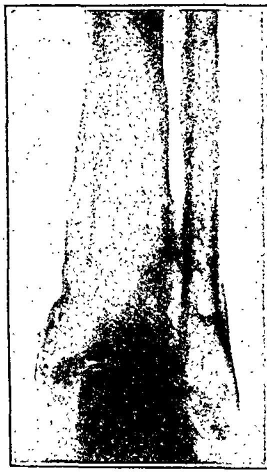
The outcome is seen in the number of people of these types who suffer from chronic leg ulcer.

Even the definitely specific spirochætal ulcers of syphilis and the tropics have a proclivity for the same area of the leg, indicating that this is locus minoris resistentia even in the absence of obvious venous disease.

Associated Conditions.

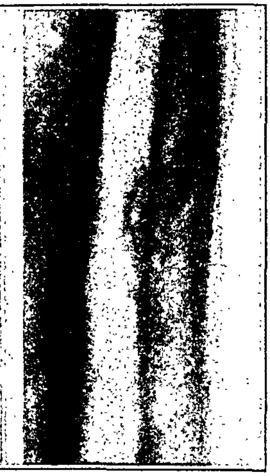
Gravitational ulcer is associated with a number of other pathological conditions, some of which are due to the disturbance of vascular equilibrium and some to the ulcer itself. It must not be thought that the evil effects of the disorganised superficial venous circulation fall only upon the superficial tissues. There is too free a communication between superficial and deep circulations for this to occur. Every structure in the leg from the bone-marrow to the hair follicles suffers changes traceable to the inadequate nutrition.

FIG. 3.



Periostitis the sequel of "white leg." Note the rarefactive changes in the lower end of the fibula.

FIG. 4.



Ossification of the interosseous membrane, together with extensive periostitis in a case of 30 years' ulceration in a man.

The associated pathological conditions encountered are :—

1. *Alopecia* of the legs is early in onset, and one rarely sees an ulcer on a hairy leg. The surgeon who levels the criticism that the adhesive is difficult to remove because of the hairs reveals his lack of experience with these cases. Glandular atrophy also occurs and causes a dryness of the skin of the legs.

2. *Various skin rashes* on the ulcer-bearing area. Erythemas and hyperkeratosis and eczemas of all kinds, scaly, desquamative, and exudative. Pruritis and dermatitis artefacta are also common. Pigmentation is the rule, and the pigmented area eventually extends until the whole ulcer area is mapped out. The pigment is a mixture of altered blood extravasation and tattooed dirt.

3. *Phlebitis* is rare although thought to be common. If it were common more cases of spontaneous cure of varicose veins would occur.

4. *Periphlebitis* on the other hand is extremely common and is a non-suppurative perivenous cellulitis always wrongly regarded as a phlebitis and often treated by immobilisation to prevent embolism, although the vein running through the inflamed area is always felt to be unthrombosed. This inflammation is often the starting point of an ulcer or the cause of the rapid extension of an existing ulcer. There is no complication of varicose veins which yields so easily to the correct treatment as this one.

5. *Periostitis* is not secondary to the ulcer but to the nutritional defect. It appears first and is most marked on the fibula and only affects the lower halves of the bones (Fig. 3). If secondary to the ulceration the tibia would be the more affected.

6. *Ossification of the soft tissues* of the leg involving the muscles, aponeuroses, subcutaneous tissues, and the bed of the ulcer itself. A striking condition is the complete ossification of the lower half of the interosseous membrane, leaving only foramina for penetrating structures (Fig. 4).

7. *Osteitis* of the lower part of tibia or fibula in the skiagram resembling cystic or fibrocystic disease of the cancellous bone. Atrophy of the cancellous bone is sometimes to be seen.

8. *Arthritis* is usual in the ankle and tarsal joints.

9. *Deformities* are usually secondary to the ulcer and it is rare that one finds a case of ulcer with normal feet. *Pes planus with its associated hallux valgus is the most* common. Pes cavus, equinus (Fig. 5), valgus, varus, and calcaneus deformities arise from the pain of the ulcer. The patient walks abnormally to relieve pain, and the deformity, at first spastic, eventually becomes fixed and a serious handicap to the patient already afflicted with ulcer.

10. *Malignant disease* supervenes in a small number of cases. A certain sign of this I have noted being invasion of the *tibia by the growth* as shown by radiography (*Fig. 6*). Another observation I have made is that the incidence of this complication is 50 times greater in the male than the female.

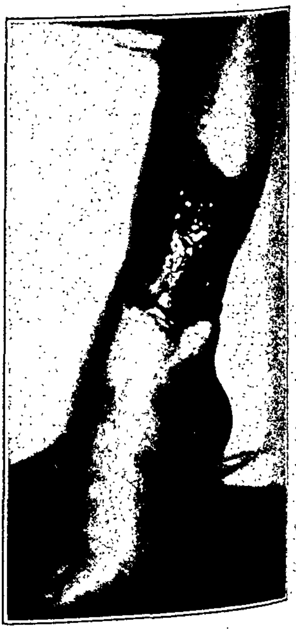
Identical in ætiology, all these associated conditions, with the exception of bone, joint, and malignant disease, yield to the same treatment as the ulcer. Even *the deformities* will *often disappear* with cure of the ulcer owing to the cessation of pain.

Treatment.

The treatment of gravitational ulcer is of four main types: (1) Treatment by neutralisation of the effects of gravity on the circulation of the dependent extremity. (2) Local treatment of the ulcer such as escharotic, stimulating or aseptic applications and skin grafting. (3) The calcium and parathyroid treatment. (4) Amputation. This is a cowardly resort, and I have only twice removed the leg and then for Marjolin's disease. I have once advised amputation for severe deformity, but was met with refusal. I have now cured 41 cases in which amputation had been recommended elsewhere.

Various combinations of the first three methods are frequently used. The third is the easiest treatment, and only requires prescribing on the part of the doctor and swallowing on the part of the patient. The second is not much more difficult, for the patient usually dresses the ulcer and the doctor prescribes and views the ulcer at ever-increasing intervals. The first method is the only logical one, but it is more difficult and involves one in repeated contact with the ulcer, unless the effect of gravity is neutralised by placing the patient in bed.

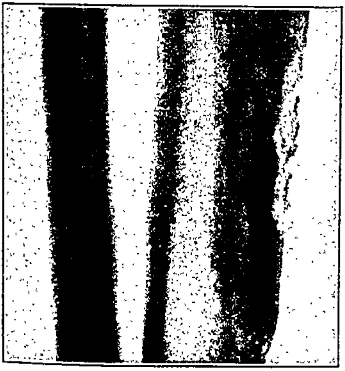
FIG. 5.



Tallipes equinus the result of annular ulcer.

The treatment of a common chronic disease of the lower classes, like gravitational ulcer, must be simple so that any doctor can apply it because the disease is so common. It must also not be time-consuming because to the doctor time is important. It must be ambulatory, if possible permitting the patient to work. It must not be painful or productive of great inconvenience to the patient, otherwise the treatment may not be followed and a relapse, if it occurs, will be regarded by the patient as a catastrophe and destroy all confidence. It must not involve any hospitalisation because there are not enough hospitals to go round. It must as far as possible be a permanent cure. And, lastly it must be cheap. Various very expensive treatments are used, but as the expenditure is of an indirect type it is not noticed. For instance, the admission of a labourer to an infirmary for six months represents £70 in hospital expenses and £70 in loss of wages. The average expense of useless dressing and lotions is generally 2*s.* 6*d.* to 10*s.* per week. So if the cost of treatment can be kept under 10*s.* a week and it heals the ulcer it is worth while. The treatment I now describe costs on the average 1*s.* per week and this is neutralised many times over by the saving on previous useless treatment and by the patient's increased earning capacity.

FIG. 6.



Marjolin's disease. Radiogram showing the characteristic changes to be seen in the bones when a varicose ulcer undergoes malignant degeneration. From a case in which amputation was performed after 18 months of varicose ulceration. For 12 months before amputation the leg was treated with ultra-violet rays. Note that the erosion of the bone occurs in the centre of an area of sclerosis due to chronic periostitis.

PRINCIPLES OF TREATMENT.

The principles of the treatment in brief are as follows:—

(1) Correction of the error in the venous hydraulics by support to the limb to neutralise vascular, lymphatic, and tissue fluid engorgement and restore circulatory equilibrium. This has been used in different ways for 300 years at least and was doubtless discovered by a patient. It is the most logical and effective treatment and strikes at the roots of the disease. It has been seen already how the simple support of boots or shoes is adequate to prevent ulcer. The support that I use is an adhesive plaster of an elastic type; the market is now flooded with different types and this in itself is an excellent sign. So far I have not changed from the original elastoplast bandage which I have now used for over two years. The adhesive is applied directly to the skin, ulcer, and eczema, and extends from toes to knee and requires six metres of three-inch bandage for the purpose.

(2) Absolute abstention from local treatment of the ulcer. No cleansing, no antiseptics, no cauterisation of any kind are used no matter how foul, how deep, or how long-standing the ulcer. The ulcer is only one of many manifestations of disordered circulation and if this is corrected nature will cure the ulcer without help from the manufacturing chemist.

(3) If varicose veins are the cause of the ulcer they are injected as seen and felt as they rise through the œdema dispelled by the bandaging.

(4) Extensive ulcers are skin-grafted to expedite healing. I use only subgranulation methods embedding small islets of skin, weaving in threads, injecting skin suspensions, and even shooting in small skin bullets. I have stuck pieces of skin on the adhesive, raw side towards the leg, and wound the skin-studded bandage on the ulcer, but without such constant results as with the other methods. All skin is the patient's own; heterogenous skin (prepuces, &c.) give no results.

(5) Finally, when the ulcer is healed and the veins injected if they present, each case is reviewed as to the necessity for permanent support and the type of support decided upon. For some cases—*e.g.*, "white legs"—a permanent support is as necessary as a truss for a hernia.

DETAILS OF TREATMENT.

The *details* of the treatment are as follows:—

(1) The patient on first attendance has a history taken with a view to finding the cause. It is rather surprising how many cases have a history dating from typhoid, pneumonia, an operation, or a fracture. In the case of women the child-bearing history is noted as well. The ulcer is then mensurated with a celluloid grid and the circumference of the leg is measured.

(2) The uppermost varicose veins are injected, using sodium morrhuate in 5 per cent. solution. The veins are always injected from above downwards because the lower part of the leg is a locus minoris resistentia and any injection mistake is paid for in full. Deterred by an initial necrosis or severe reaction as a result of low injection, the inexperienced may abandon treatment and the patient may be left with his varicose veins *and* a chronic injection ulcer or indolent phlebitis.

(3) The leg is then bandaged very firmly and evenly over a longitudinal strip on both sides of the leg. When there is much œdema the bandage must be put on very hard with practically all one's strength. The tightness is proportional to the swelling and induration, but one should always err in respect of being on the tight side. No treatment of any kind is applied to the ulcer, and eczema and phlebitis or periphlebitis are no contra-indication. If the ulcer is of the painful malleolar type (Corlette's ulcer) the crater is filled with aspirin powder blown in with an insufflator. This a valuable local analgesic. I often give a sleeping-powder for the first week of treatment to ease pain and allay worry and this secures the patient's confidence. Such a radical change of treatment is often likely to be contrary to the patient's own ideas on ulcer management and to be met with some opposition at first.

(4) The second visit is at a variable interval of time

from three days to a month, according to the size of the ulcer, the amount of œdema, and the position of the ulcer. If the ulcer is large and its discharge copious, the bandage becomes sodden and requires frequent changing. If the œdema is great the bandage gets loose for the very best reason—viz., shrinkage of the leg—and will require reapplication. If the ulcer is over the malleoli the movements loosen the bandage and it has to be renewed more frequently. Sometimes if there is a very marked degree of œdema an intravenous diuretic is given (salyrgan).

The patient on leaving is given the following instructions:—

When the discharge seeps through it should be washed off with soap and a nail-brush and a dressing put over the bandage. A free discharge must be regarded as beneficial.

Return to work and take plenty of walking exercise.

Wear a long stocking or crêpe bandage over the adhesive to prevent it from being disturbed during sleep or in pulling on clothing.

(5) At the second attendance the patient removes the bandage on arrival and wipes away the discharge with wet cotton-wool. Again the veins are injected in the same order and if the ulcer is large and a good sheet of granulations has developed, then grafts can be inserted under the granulations on the fibrous bed of the ulcer in any of the ways mentioned previously.

(6) Further attendances are at increasing intervals of time, and each time the visible and palpable veins are injected. Grafting may be repeated, and it is well always to have a graft waiting in the centre of the last patch of ulcer to receive the edges as they close in, otherwise there is often an annoying delay at the last.

(7) Finally, when the ulcer is cured and all veins obliterated, the patient is given an Unna's case, or better still, a Klebro resin bandage for three months to consolidate the cure. After this, permanent support may be required and this may take the form of a Klebro bandage renewed four times per annum or an elastic stocking; of the latter I have found none so effective as the Bourjeaurd. In very seriously disorganised legs the support from any form of stocking is inadequate and firm Klebro, Elastoplast, or Unna bandages may have to be worn for some time.

Patients are also seen every three months for injections and reconsideration as to renewal or abandonment of support. They are advised to wear boots instead of shoes and to cover every small abrasion with sticking-plaster and to return if there is any recurrence.

Disadvantages and Advantages.

The disadvantages of the treatment are:—

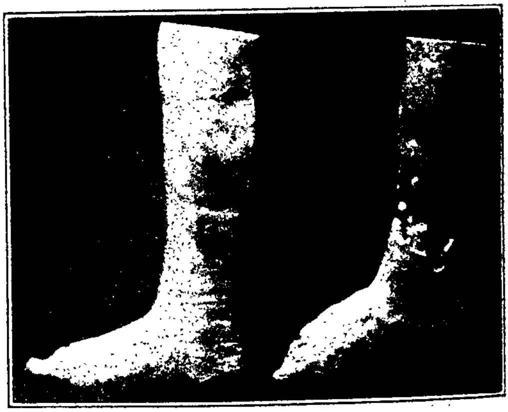
(1) Eczema occurs under the bandage sometimes and if present before treatment it may get worse as a result of the bandaging. As far as the patient will allow I ignore the eczema and carry on as if it was not there, as a rule with the happiest results. The appearance is sometimes most alarming, especially in the exudative types, but perseverance is rewarded eventually and eczema, ulcer, and œdema disappear.

(2) A generalised eczema especially affecting the face and forearms I consider may be due to an idiosyncrasy to the sodium morrhuate. It is very rare but most annoying when it occurs. It might possibly be due to zinc idiosyncrasy from the zinc oxide in the plaster or again to emptying the legs of some toxic substance which has collected in the legs over a long period of time. Finally certain individuals develop a generalised dermatitis from any plaster applied anywhere.

(3) Itching is annoying occasionally but bathing the bandage with cold water relieves it.

(4) Recurrence is an argument only against painful or troublesome or expensive treatments. With a simple inexpensive comfortable treatment like this recurrence is not a calamity and is most easily dealt with. Even if the treatment did not cure, the comfort secured to the patient would justify it. Recurrence is very uncommon if due precautions are taken. Among the disadvantages must be mentioned the rapidity of cure. This is accomplished frequently before the œdema or veins are completely dealt with; the patient becoming impatient of the tedious injections then disappears because the ulcer is cured.

FIG. 7.



Casts showing (left) effect of 7 weeks' treatment by author's method after 12 years' treatment by other methods.

To illustrate the type of result to be expected with this treatment, Fig. 7 is a photograph of two actual plaster impressions taken of the same leg before treatment and seven weeks later. The wonderful effects of adequate compression can be seen in the reduced volume of the leg equivalent to almost half a gallon of fluid and the perfect healing and restitution of the leg to the condition it was in 15 years ago before the ulcer started. This patient had been a regular hospital out-patient for 12 years and had had an Unna's paste dressing applied *300 times* at least.

THE NEEDS OF MERSEYSIDE.—To raise £165,000 is a task which the Merseyside Hospitals Council have set themselves during the current year. If the attempt succeeds, it will mean that an additional 70,000 contributors will have to be enrolled to the 1*d.* in the £ fund. Success or failure will turn on the attitude of the smaller firms which do not at present operate the fund. It has been found that unattached workers within a ten mile radius of Liverpool Town Hall have cost the hospitals £31,000, against a return of only £8150.

RADIUM TREATMENT AT HULL.—Dr. W. M. Frazer, the medical officer of health for Hull, has suggested that a self-contained block of 50 hospital beds should be set aside at the Anlaby-road Institution, Hull, for the treatment by non-surgical means of inoperable cases of cancer. He thinks that the opportunity appears to be favourable for the creation of a team of specialists in conjunction with one of the corporation hospitals. There is a supply of radium which is administered by the Hull Radium Trust Deed, readily available for use at the corporation hospitals, and Dr. Frazer points out that an important requirement is that the supply of so expensive a therapeutic agent should be used as nearly continuously as possible.

IMPETIGO IN SCHOOLS.*

By W. J. O'Donovan, O.B.E., M.D., M.R.C.P. Lond.,
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Impetigo may be defined as a pustular disease of the skin, vesicular in its onset and crusted in its development. It is found at all ages, but most commonly in young persons. There is a special variety, impetigo neonatorum, found in new-born infants, occurring in epidemics, at times in maternity homes, in which blebs are the most prominent clinical feature, but, except for recognising its existence we must pass on to the impetigo of children well described by Tilbury Fox in 1864. Matzenauer in 1900[1] linked this pemphigoid eruption to impetigo contagiosum by proving the identity of the activating micro-organisms. In school-children this disease is of frequent and fairly regular incidence. A special investigation on this was carried out by J. Morrison in Hull, and published last year.[2] In 1929, 3331 cases were treated at school clinics, yet it was comparatively rare to find cases at the routine medical inspection of schools. The great majority of children attended the clinics on the advice of school teachers or after nurses' visits of inspection to the schools. The monthly incidence of new cases in 1928 was reported as follows:—

January	135	May	215	September	349
February	188	June	290	October	241
March	195	July	127	November	234
April	129	August	136	December	162

I subjoin for comparison my London Hospital figures for 1930.

January	53	May	55	September	59
February	32	June	40	October	67
March	34	July	48	November	31
April	50	August	50	December	37

In the last quarter of the years the figures of new cases are higher in each case. It is generally agreed that boys are more commonly affected than girls, yet verminous infestation is common in little girls. The bacterial cause cannot be held to be positively settled. It has been shown that the initial vesicles give pure cultures of *Streptococcus pyogenes* when cultivated in liquid media in capillary tubes and that infection by staphylococci is secondary. C. W. Finnerud[3] says that impetigo is due to bacteria, streptococci chiefly, which presumably are present, to some extent normally, on the skin of all of us. They gain access into the skin at the site of an abrasion such as might occur from a scratch, a cut, or picking the face with dirty finger-nails, or the disorder may be secondary to a running nose or ear. It may be transmitted from one individual to another from the use of a common towel or wash-cloth and by all forms of intimate contact.

The technique recommended by Sabouraud for the cultivation of the micro-organism is as follows:—

> The surface of an early unbroken vesicle is cleansed with alcohol and the serous contents removed by pricking it with a sterilised pipette. One cubic centimetre of the serum is then mixed with .1 c.cm. of neutral peptone bouillon and incubated at 37° C., thus reproducing anaerobic conditions similar to those which occur in the actual lesion. In 12 hours a pure culture is obtained, showing chains of streptococci, a certain number of which are in diplococcic form. If the serum be taken from older lesions, in addition to the streptococci, masses of staphylococci will be found in the medium; these are secondary contaminations. If solid media be employed a culture of staphylococcus is generally the result, as that organism grows much more luxuriantly on solid media and either hides or kills the more delicate and slower-growing streptococcus. A mixed culture may be obtained, however, on solid media by the simple expedient of removing the crust, rubbing the raw surface with alcohol, inoculating a bead of the serum which exudes into the water of condensation, and then allowing it to run over the surface of the medium. After the tube has been incubated for 24 hours, small white colonies of streptococci may be seen among the larger staphylococci colonies.

Clinical Features.

The clinical picture of impetigo is extremely variable. The outstanding feature is the presence in the skin of large or small crusts; these appear to be stuck on, for the skin is not infiltrated and its general level is unaltered by the presence of the lesions. The crusts are greenish-yellow in colour, occasionally blood-stained, sometimes circular or disc-like in outline, polycyclic with nummular scabs if coalesced. Rarely the patient's features are repulsive from a large mask-like accretion of greenish-yellow crusts that coat the face from the eyebrows to the chin. In all cases, at an early stage, at the periphery of the thick ugly lesions can be found, on close examination, bordering the scabs thin-walled translucent vesicles whose contents may be sterile or give mixed cultures of strepto- and staphylococci. The site most commonly affected is the face, since this is most exposed to injury from wind and sun, cuts and scratches, discharging ears, running eyes, and catarrhal nostrils, but the disease may commence on any other part of the body, on the scalp or ears, on the trunk or limbs. Wherever it starts it may be widely and rapidly spread by auto-inoculation through scratching, for the disease is always accompanied by irritation and children have little self-control. When one considers that among the poor children pillow-slips are changed infrequently, body linen may be changed weekly, and many mothers will not dress sores at all, one is bound to concur with H. G. Adamson's opinion[4] that impetigo contagiosum is an eruption which usually runs its course in a period of three weeks, but he doubts whether any of our routine treatments really shorten its course.

The occurrence of distinct types has called for the use of certain descriptive terms; Unna[5] speaks of impetigo vulgaris characterised by follicular vesicles rapidly converted into loosely adherent greenish-yellow crusts and scabs. Impetigo circinata, forming thin flat crusts which sink in the middle and spread at the margin. Impetigo streptogenes, a vesicular flat greenish-yellow eruption with numerous irregular processes. Impetigo serosa and impetigo protuberans explain themselves. To-day we are content to pick out a case characterised in part or entirely by beautiful pink thinly scabbed rings, as impetigo circinata, but where the delicate bullæ are notably unruptured we speak of impetigo bullosa. Ordinarily the scabs gradually dry leaving a scaly, pink, defined site which clears without a scar. But occasionally the lesions do penetrate into the substance of the skin causing shallow indolent scar-leaving ulcers, a condition termed "ecthyma." More cases of this will be seen in workhouses and public assistance practice than in hospital out-patients or in ordinary school work. At times, a school, a home, or an institution may have an epidemic invasion which is most difficult to account for. It may be the sequel of a widespread influenzal attack, a sudden alteration in diet, or a profound shock. I have seen an epidemic of impetigo in a munition factory after a grave explosion.

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* An address read before the Medical Officers of Schools Association on Feb. 20th.

[1] Wien. Klin. Woch., 1900, xiii., 1077.

[2] Med. Officer, 1930, xliii., 221.

[3] Med. Clin. N. Amer., 1929, p. 451.

[4] Trans. St. John's Dermat. Soc., 1927, p. 59.

[5] Histopathology, Edinburgh, 1896, p. 135.

Ætiology.

Predisposing causes are: (*a*) The age of the patient. Though it may occur at any age it is essentially a disease of childhood, affecting chiefly children under 15 years of age. (*b*) Lack of *cleanliness.* Streptococci are not usually found upon the healthy clean skin. (*c*) *Pediculi capitis.* One should always be careful to examine the scalp of a child with impetigo of the face for pediculi. The presence of pediculi causes the child to scratch its head; the scratching tears the epidermis, pustules develop, the finger-nails become infected, and convey the micro-organisms to the skin of the face. Dowling [6] says that it appears that the staphylococcus is an organism that finds its natural home in the follicle; it appears, too, to have a special affinity for the skin, just as dysentery bacilli have an affinity for the large intestine, gonococci for the urethral mucosa, and so forth. Staphylococci are normal inhabitants of the skin, residing for the most part in ones and twos just inside the mouth of the follicle, and so long as they do not multiply they do no harm. But when conditions arise which allow them to germinate—e.g., slight injury to the skin by a rubefacient such as camphorated oil, to cite a common example—symbiosis changes promptly to infection. (*d*) *Otorrhœa*—or any other local focus of suppuration. Otorrhœa is very often followed by an impetiginous outbreak. (*e*) Exposure to *contagion.* Contagion may be direct—e.g., from one child to another, or from a child to a nurse by direct contact—or mediate, through towels, sponges, &c., used and contaminated by a sufferer. "Scrum-pox," which is simply impetigo, probably owes its rapid spread through a school both to direct and mediate contagion.

I would, however, draw attention to the fact that impetigo is often superimposed upon other acute or chronic skin diseases, like palimpsest writing, and hence every case needs detailed personal consideration. By taking case-histories, rather than using the diagnostic method of photographic recognition, conditions of great interest may be revealed under apparently ordinary impetigo. Hop dermatitis in children may be recognised as an acute flaming red swelling of the face in the hop-field, but on return to London the clinical picture may be a crusted purulent impetigo of the face with no distinguishing features. Often in school-children urticaria is a very chronic affair, papules coming up in itching crops for many months on the limbs and trunk; patients should always be examined widely for new recent wheal lesions lest the secondary impetigo from self-infection due to violent scratching be alone treated. Ordinarily, three weeks will see most cases through, but in the debilitated and in poor stocks the disease may last much longer. Particularly in little boys and girls brought up in public institutions, impetigo may be long continued and when cured, recurrent. In this type, pallor, thin limbs, personal apathy and protuberant abdomens are notable features. In children coming from verminous, bug-infested homes, recurrent impetigo is the rule. I have frequently known families, not units, of such tenements admitted, discharged, and readmitted into municipal hospitals constantly for two years at a stretch. With increasing poverty and increasing reliance upon school nurses to carry out maternal duties, the vermin factor will need constant vigilance. The centre of London is very clear, but infested heads are, to me, common in its periphery and I am able still to demonstrate pediculosis palpebrarum to my students.

Frequently one meets children who pick their scabs with astonishing perseverance. No restraint, even splints, restricts their rubbing. In these, after an acute and widespread attack has subsided, one lesion at the side of the nose or in the fold of the chin may persist for six months or longer. Perpetual small *injuries* prevent healing and enable the organisms to multiply locally; yet these finally die away and leave no scar. Sensitivity to *weather* is a source of many cases of impetigo of the face. More in winter than in summer this condition is regularly recurrent and it is equally common in both sexes. For this to occur there must be a peculiar individual susceptibility of congenital or Mendelian origin. The eruption first occurs as a finely scaling erythema, or as numerous small pink papules mostly on the forehead and on the knuckles with minutely white scaling or blood-scabbed apices. If the patient comes under observation early a correct diagnosis is possible, but if he comes later in the cold season, well scratched and widely impetiginised, a full diagnosis is difficult unless one's records show previous late autumnal outbreaks; the parents' histories are here very unreliable; memories of associated seasons and lesions are, pardonably, very faulty. The recognition of this underlying fragility is valuable, since subsequent recurrences may be prevented by small desensitising doses of X rays to the skin of the eruptive regions early in the next winter season.

Scabies is an ætiological factor of importance in school-children. Owing to the delicacy of their skins the local pustular reactions are severe and spread by scratching beyond the areas usually affected by scabies. A true impetigo lesion on the face or scalp may be the secondary effect of scabies on the legs and wrist in a child; after the scabies has been eradicated, treatment for the impetigo may still be needed. The same caution applies to tinea of the scalp. The presence of yellow crusts on the scalp does not exclude a diagnosis of ringworm also; the pyogenic infection may be due to scratching the ringworm, which irritates very sensitive children, or it may be due to the application of violent home remedies.

Probably the greatest difficulty is presented by patients in whom impetigo is implanted upon a *seborrhœic* state. In these the disease spreads rapidly and scalp and flexures are rapidly and extensively involved. The seborrhœic diathesis must be firmly grasped by any who are interested in skin medicine. Seborrhœic families are common enough and so, too, its heredity nature is often strikingly manifested. "In infancy the true milk crust betrays the future seborrhœic."[7] Later infantile eczema may cause months of concern; at the beginning of school age this same child may break out into an attack of acute seborrhœic dermatitis of the scalp or widespread on the neck and flexures of the body. This condition is often overladen with impetigo. When developed the seborrhœic scalp is red or pink, scaling all over, and generally dry. Moist patches from exudation of clear serum are covered with heaped-up minor aggregations of damp, yellowish scales. Over the greater part of the head the pink surface is dry, and covered with copious, easily detached white scales. The hair has no lustre; its surface, if dark, is greyed. Generally the hair is plentiful, but at times in an exacerbation of the disease there may be a general loss of hair producing notable alopecia; regrowth is the rule. Were the condition confined to the scalp it would be bad enough, but extensions on to the body are frequent, particularly to the flexures. The folds of the groins, the umbilicus and the armpits, although hairless, are red, and covered with copious, easily detached white small scales. At times all these sites may be moist, exude freely, and show scabs and macerated epidermis, heaped over the reddened surface as a pale yellow malodorous and pultaceous accretion. During acute phases it is common for a moderate adenopathy to develop in the neck and groins. These children otherwise are well, but particular attention should be called to a hall-mark of skin chronicity which they invariably show. The eyelids are reddened at their margins, while yellowish crusts are formed at the roots of the eyelashes. The lids are pink and roughened from frequent rubbing, matted bunches of eyelashes are often seen, and a considerable disfiguring loss of eyelashes takes place also. In about one-third of the cases two further extensions can be seen. First the eyebrows may be involved; their site is reddened and scaling, or moist and scabbed. Secondly, behind the ears red fissures may develop; the surface of the ears is pink, the whole ear is thickened, while stiff and macerated scales and caked exudate often cover a retained yellow, sticky, purulent discharge that has been formed at the crescent of attachment of the auricle to the scalp. Flexual impetigo is the name applied to such post-auricular and joint lesions. Constant apposition, together with warmth and moisture of the parts, favours the early rupture of vesicles, infection by pyogenic cocci, and the rapid extension of the disease. Later in life but still of school age, the pilo-sebaceous orifices are enlarged and exude visible, palpable oily sebum or are filled with solid plugs—comedones—containing acne bacilli in abundance and from time to time inset with pinhead follicular staphylococcal pustules. The adolescent boy or girl with acne is a frequent subject of acute impetigo.

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[6] Trans. St. John's Dermat. Soc., 1927, p. 21.

[7] H. W. Barber: THE LANCET, 1929, ii., 363.

Complications.

Complications are unusual, but boils and adenitis are fairly often seen in a long series of cases. Surgical evacuation of pus from enlarged occipital, cervical, or femoral glands may be needed after scalp or leg lesions. More troublesome paronychia (whitlow) is caused by streptococci inoculated under the nail-fold in scratching, or the matrix may be attacked causing separation of the nail at its proximal end. "I have seen a case of this kind in a nurse who had several nails affected while attending a case of impetiginised eczema" (J. H. Sequeira).[8] When impetigo extends from the glabrous to the hairy skin as on the thighs, acute deep follicular staphylococcal abscesses may develop or a multitude of superficial closely set pinhead abscesses each centred about a hair. In 1930 I saw a boy with general impetigo which left its last lesion on the dorsum of the left foot, from this there followed a suppurative phlebitis needing a 14-inch incision up to the thigh. Suppurative pylephlebitis is a recognised fatal event in babies, infection entering at the umbilicus, travelling on as softening clot up the infantile para-umbilical veins. It is less commonly realised that a systemic blood infection may occur when the skin lesion is moderate in intensity, and an osteomyelitis or pyelitis, a mastoiditis or a perinephric abscess may be the end-result. I have seen simple adenitis of the neck, the sequel of impetigo of the scalp, develop into tuberculous adenitis, soften, discharge exteriorly, and end as characteristic scrofulodermia of the skin of the neck.

Preventive Measures.

Children with impetigo should not be admitted to school; in boarding schools they should be isolated and treatment in clinics or in school infirmaries should always be closely supervised by a medical practitioner. When children return to any school after the holidays, their hair should be short so that head inspections, which are essential, can be carried out with efficiency. A scab or a tinea in a thick head of hair is easily missed. It seems to me hopeless to speak about nits or verminous heads to unsatisfactory adult women; they will not be exterminated until we have a sensitive public conscience, and this must be done by precise instruction in the meaning and effects of infestation in hygiene lessons. The fly must be swatted and the nit eradicated. One cannot acquit hairdressers (W. J. O'Donovan[9]) of responsibility for the spread of impetigo in poorer quarters of the town; their brushes, scissors, hands, and combs are communal. Instruction in hygiene for hairdressers should be part of the curriculum in the polytechnics and schools that are giving us a new generation of cleaner and more scholarly hairdressers. Examination, inspection, and registration of all hairdressers will in time be undertaken by the State.

Prompt first-aid treatment of minor cuts and abrasions is as important in the playground as in the factory, and our children of all classes must be taught the need of short and clean finger-nails. The unclean little shirts and stockings of too many school-children are still a pitiful sight when they undress for the doctor, and the sour smell of their unwashed bodies must be a trial to their teachers. The groundwork of public health in England is not yet laid, and we must take care lest a novel interest in curative medicine lessens the concentrated attention our health authorities give to primal preventive measures.

A word should be said about the chronic seborrhœic children; a few of these are secluded in special schools but most go to ordinary schools as chronic carriers of the micro-organism of impetigo. There is pus on their eyelids, pus in the chronic fissures behind their ears, and organisms in abundance are distributed freely with their dandruff. School-children's heads must be shampooed weekly—seborrhœics aggregated for effective treatment. The feet and noses of domestic animals dabble in every form of filth and they mix all too intimately with the children in many homes. The thicker skins of adults can better resist infection from the damp noses and abrasive paws of domestic cats and dogs.

Differential Diagnosis.

I would here only draw attention to cases sent to me as impetigo but have turned out to be nævi, zona, kerion and cattle ringworm, molluscum contagiosum, lupus vulgaris, and recurrent herpes. An inquiry as to whether anyone else in the family itches puts one on one's guard against scabies. One or two pearly dimpled nodules will warn the observer that a thick suppurating crust may be an infectious molluscum tumour undergoing a spontaneous cure.

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[8] Diseases of the Skin, London, 4th ed., p. 615.

[9] The Hair, London, 1930, p. 86.

The history of lupus vulgaris is long, the lesions are fixed, destruction of tissue occurs progressively, and there is often an associated lividity so that a correct diagnosis even in an impetiginised case about a nostril (a favourite site) should be boldly ventured. Bromide and iodide eruptions occur in children as in adults; the parents often proffer their opinion that the child's medicine is responsible for its rash. The granulomatous nature or exuberance of the lesions should sound a note of warning. A history of a repeated impetigo in one fixed site should lead to a suspicion of recurrent herpes. In this disease the onset may be seen, or remembered, as a group of vesicles or an inflamed base, later the whole area may be covered by a purulent crust and the clinical picture lost; even at a late stage the absence of satellite lesions and the restricted area of attack which shows no attempt at peripheral extension should help to an accurate diagnosis. Frambœsiform syphilis seems always to be diagnosed as impetigo of the scalp in its early stages, but the suppuration surrounds red moist raspberry-like excrescences of the scalp, but both this and interdigital condylomata in children I have seen termed impetigo. Bullous urticaria, dermatitis herpetiformis, and late salvarsan dermatitis are not infrequently sent to the dermatologist with a label of impetigo, but special experience and observation for a short period in hospital will unravel these rarities fairly easily.

Treatment.

It is ideal and advisable for these cases to be kept in a room of one temperature. If the body is infected they should wear cotton next the skin, changed, and boiled daily. If the house is not clean, treatment in a clinic or by a nurse should be sought. Ointments of any kind soften the crusts and they become detached on to the bed-clothes to infect new sites. Mercurial ointment of any potency, particularly unguentum hydrargyri nitratis dilutum, is distinctly harmful to the inflamed skin and causes acute exacerbation of the inflammation—i.e., dermatitis medicamentosa. The lesions should be bathed in hot water or starch-poulticed to soften the crusts, then swabbed with very weak peroxide lotion and dusted with a zinc oxide and calomel dusting powder. Excellent results can be obtained by spraying the cleaned sites twice daily with a solution composed of equal parts of 2 per cent. malachite-green in 80 per cent. alcohol, and 2 per cent. mercuric chloride in 80 per cent. alcohol. If the exudation is not too copious, retentive lint and gauze dressings are better avoided. Chronic cases of impetigo can be cleaned by daily mopping with a silver nitrate solution. Besredka's antivirus has not been successful in my hands in ten cases of chronic impetigo treated at St. Paul's Hospital. The application of X rays causes impetigo to spread more rapidly, but three or four applications of erythematous doses of ultra-violet light in the course of a week or ten days will usually cure an impetigo contagiosa at any stage. Other preparations in use in teaching clinics are 3 per cent. solution of tincture of iodine, 1 per cent. aqueous solution of mercurochrome, and 2 per cent. aqueous solution of gentian-violet. Iodine is effective but may be a sharp skin irritant. W. J. Churchman [10] reported that gentian-violet, triphenyl methane in 1 : 1,000,000 dilution inhibited the growth of staphylococci, and that it had a selective bacteriostatic action on Gram-positive organisms penetrating living cells without deleterious effect.

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[10] Jour. Urology, 1924, ii., 1.

TREATMENT OF OVARIAN DEFICIENCY WITH OVARIAN EXTRACT (ŒSTRIN).

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Comparatively few reports have appeared on the clinical value of the recently isolated œstrus-producing hormone. One of the chief reasons for this, no doubt, has been the scarcity of supplies of a standardised extract. There is no lack of literature dealing with the effects of commercial preparations, but as most of these have been unstandardised the observations are of little scientific value. Three years ago we were fortunate in obtaining supplies of a standardised extract. Prof. E. C. Dodds, of the Middlesex Hospital, in conjunction with J. D. Robertson,[1] has already reported the results of treatment with this preparation in 86 cases of amenorrhœa and climacteric conditions. During the same period we have carried out a parallel investigation with the same preparation. Our clinical material has been largely obtained from the gynæcological department at St. Thomas's Hospital, where previous examination has eliminated any gross pelvic disease. The results of treatment of these patients, 63 cases of amenorrhœa of different types, form the basis of the present report. Other conditions, climacteric disturbances and so on, have been treated, but as the majority of the symptoms were purely subjective, we found it almost impossible to assess the results.

PREVIOUS REPORTS.

Since Dodds and Robertson [1] have dealt with the literature on the discovery, preparation, and physiological and chemical properties of œstrin we shall not again refer to this. In their own clinical investigation in cases of amenorrhœa and climacteric conditions they reported definite objective signs of improvement in 30 only of their 80 cases treated. Among 32 unmarried women with amenorrhœa, menstruation was re-established in 10 (31 per cent.). Among 30 married women similar results were obtained in 18 (60 per cent.). The married group, they point out, were mostly cases of secondary amenorrhœa, and in these the response was considerably better than in the unmarried group. As regards the effect of œstrin on the climacteric phenomena, they noted that five cases of naturally occurring menopause showed abatement of their vasomotor and nervous symptoms; two cases of surgical climacteric following bilateral ovariotomy were also benefited. They suggest that the results are encouraging, and that the preparation is worth a further and extended clinical trial.

Shaw [2] has carried out a similar clinical investigation with the standardised hormone. His results are as follows. Among 15 cases of spasmodic dysmenorrhœa with the typically ill-developed uterus associated with this condition, no improvement was observed in 6; in the 9 others treatment was successful either in completely freeing the patient from pain or in alleviating it. In 5 cases of primary amenorrhœa no definite effect was observed, and menstruation was not established in any of them. Two cases of secondary amenorrhœa associated with adiposity gave negative results, but 6 others of this type, but without adiposity, all menstruated after the administration of œstrin.

Sevringhaus and Evans,[3] using a standardised ovarian hormone, also report on its clinical value in climacteric disturbances of the vasomotor type. Beneficial effects were observed in one-third of their cases.

Treatment and Clinical Material.

The water-soluble ovarian preparation used in these investigations has been fully described by Dodds and Robertson,[1] its manufacture and standardisation by Allan, Dickens, Dodds, and Howitt.[4] It contains 10 rat units per c.cm. Treatment consisted in a course of daily injections, given subcutaneously, of a dosage of 1 c.cm. (10 units). The courses varied in length from 6, 12 to 18 days. If no objective evidence of improvement occurred at the end of this time, the course was usually repeated if supplies were available. The aim was to give a series of small doses spread out rather than less frequent large doses. As Dodds and Robertson point out, this method was based on their animal studies, which have shown that a better response could be evoked by giving a series of small doses spread over a period of days rather than by giving one large single dose.

The type of case treated can be classified under three main headings:—

1. *Primary Amenorrhœa.*—Individuals who had passed the normal age of puberty without any signs of the onset of menstruation.
2. *Primary Menstrual Irregularity.*—Individuals in whom menstruation had never occurred from the onset at less than three or four monthly intervals.
3. *Secondary Amenorrhœa.*—Individuals in whom amenorrhœa developed after some years of regular menstruation.

The majority of patients in Group 1—primary amenorrhœa—presented in addition some abnormality or delay in bodily development. Three were examples of infantilism, using this term in the wide sense—the stage of bodily development represented being earlier than that appropriate to the age of the individual. These cases may possibly have been suffering from hypopituitarism, a functional deficiency of the anterior lobe, but in none was there any evidence of a definite pituitary lesion. Of the remaining cases in this group one was an example of primary ovarian deficiency. She presented the typical bodily measurements of the eunuchoid, with a complete absence of development of the secondary sex characteristics. The others, three cases, were apparently normal individuals without any evidence of endocrine disturbance apart from the amenorrhœa.

Of the 19 cases in Group 2—primary menstrual irregularity—a considerable proportion showed minor stigmata of endocrine or metabolic abnormality; some were obese, others undeveloped, whilst a few had goitre or mild hypothyroidism. These conditions, however, had all been appropriately treated for a considerable time before treatment with œstrin was commenced. The remainder of this group, seven cases, were apparently normal individuals, apart from their tendency to infrequent menstruation.

The individuals of the third group—secondary amenorrhœa—were all more or less normal apart from this symptom, and all had menstruated normally and regularly for some years before the onset of this condition. A variety of causes appeared to have been responsible for its onset, for one group of factors included such diverse conditions as change of climate, usually residence abroad, shock, anxiety or overwork, operative shock, dietetic errors, and infective illness, whilst in the other the amenorrhœa dated to pregnancy or miscarriage. No cases of secondary and symptomatic amenorrhœa due to definite and active disease in other systems of the body, such as thyrotoxæmia, diabetes, or pituitary tumour, were included in this series.

Results of Treatment.

Primary Amenorrhœa.—In Table I. will be found the results of treatment in seven cases of primary amenorrhœa. It will be seen that in spite of the administration, in one instance of as much as 540 units, and in the others doses varying up to 360 units, the results are negative except in Case 3. Moreover, in this patient, a girl of 19, with moderately developed secondary sex characteristics, it is quite probable that the onset of menstruation was imminent when treatment with œstrin commenced. She did, however, begin to menstruate immediately after receiving 180 units of œstrin, and it is possible that treatment accelerated this event. It is also to be recorded that in Case 7, though no menstrual bleeding occurred, epistaxis, an entirely new symptom in this patient, was observed during the course of treatment. Taking the results of treatment, however, in this group as a whole, it is clear that there is no definite evidence that any of the patients were benefited.

TABLE I.—*Primary Amenorrhœa.*

Case.	Age.	Type.	Units inj.	Result.
1	21	Mild grade eunuchoid.	360	Nil.
2	30*	Infantilism.	120	„
3	19	Delayed development; normal type.†	180	Onset of menst. after 18 inj. immed.
4	22	Infantilism.	120	Nil.
5	16	„	540	„
6	30*	Normal type.	70	„
7	18	„	210	„ Epistaxis.‡

* Married. † Just reaching puberty. ‡ For first and only time during injection.

TABLE II.—*Primary Menstrual Irregularity: Negative Results.*

Case.	Age.	Type.	Durat. present amenor.	Prev. menstr.	Units inj.
1	26*	Goitre and obesity (T.).	6 m.	3–6 m.	170
2	21	Partial infantilism.	5 m.	?	110
3	22*	Obesity; hirsuties (male type).	6 m.	Every 12 m.	120
4	25	Thyroid defic. (T.).	4 y.	6 w.–3 m.	500
5	27*	Obesity foll. marriage.	10 m.	2–9 m.	50
6	24	Adol. goitre; obesity (T.).	6 m.	5 m.	120
7	20	Obesity; hydrocephalus.	12 m.	Every 12 m.	120
8	21	Obesity; birth.	2 y.	„	240
9	19	Partial infantilism (C.).	6 m.	6 w.–4 m.	120
10	18	Thyroid defic. (T.).	3 m.	2–12 m.	240
11	30*	Normal.	9 m.	6–7 m.	300
12	23	„	1 m.	Every 6 m.	120
13	21	Thyroid defic. (T.).	7 w.	7 w.	120

* Married.
Amenor. = amenorrhœa. y. m. w. = years, months, weeks. (T.) = treated. (C.) = cachectic.

Primary Menstrual Irregularity.—Tables II. and III. show the results of treatment in the 19 cases of primary menstrual irregularity (Table II., negative results; Table III., positive results). It can be seen that the majority of these patients, 13, did not benefit from treatment, though in the remainder, six, the normal rhythm of menstruation was re-established during the period of observation. The latter varied between three and five months. No cases were included in this series in which the previous rhythm of menstruation was not fairly definitely established. If reference is made to column 7 of these tables it will be seen that details as to this are given. In column 4 also will be found the duration of the immediately preceding period of amenorrhœa. The chief point of interest in this series is the fact that nearly all the positive results were obtained in otherwise normal individuals, whilst in the cases which presented evidence of metabolic or endocrine disturbance, in spite of the fact that the latter had been appropriately dealt with for a considerable period before the commencement of œstrin treatment, the results were almost entirely negative.

TABLE III.—*Primary Menstrual Irregularity: Positive Results.*

Case.	Age.	Type.	Durat. present amenor.	Prev. menstr.	Units inj.	Result.
1	32*	Normal.	3 y.	6 w.–6 m.	140	I. and S. (3 m.).
2	19	"	6 m.	6 w.–12 m.	60	I. and S.
3	18½	"	3 m.	7 w.	190	I. and S. (4 m.).
4	28*	"	6 m.	2–12 m.	140	I. and S. (5 m.).
5	24	Thyroid defic. (T. 6 m.).	11 m.	6 w.–2 m.	280	I. and S.
6	28*	Normal.	6 w.	11 m.	180	I.†

* Married. † Subsequently pregnancy.
I. = immediate. S. = subsequently.

TABLE IV.—*Secondary Amenorrhœa: Negative Results.*

Case.	Age.	Durat. of amenor.	Prev. menstr.	Cause of amenor.	Units inj.
1	21	4 y.	Reg.	Self-imposed diet for obesity.	440
2	21	9 m.	Reg. till 18.	Change of climate.	400
3	23	20 m.	"	?	120
4	18½	3 m.	Reg.	Change of climate (Italy).	160
5	30*	4 y.	Reg. till md.	Foll. miscarriage.	100
6	24*	4 m.	Reg. till 19.	Treated thyroid def.	100
7	27*	11 m.	Reg.	Foll. pregnancy.	100
8	28	3 y.	"	Shock; anorexia.	100
9	20	2½ y.	"	Overwork, examin.	480
10	28*	2 y.	Reg. till 24.	Foll. opern. tonsils.	360
11	30*	4 y.	Reg.	Nervous breakdown.	120
12	23	6 y.	"	Malaria.	240
13	15	10 m.	"	Anorexia nervosa.	240
14	21	18 m.	"	Shock; death of father.	170
15	40*	6 y.	"	Opern. tonsils.	110
16	29*	7 m.	"	Foll. lactation.	120
17	39	6 m.	Reg. till 24, 6 m. since.	War diet.	120

* Married.

Secondary Amenorrhœa.—In Tables IV. and V. are shown the results of treatment in 37 cases of secondary amenorrhœa. In 17 cases, or 46 per cent. (Table IV.), no benefit was observed in spite of the fact that some of these cases received between 200 and 500 units. In 20 cases, or 54 per cent. (Table V.), on the other hand, beneficial results were observed, menstruation reappearing during or after the course of treatment. It is also to be noted that in 12 of these successfully treated cases menstruation continued at monthly intervals during the period of observation (3-5 months) without any further treatment.

TABLE V.—*Secondary Amenorrhœa: Positive Results.*

Case.	Age.	Durat. of amenor.	Prev. menstr.	Cause of amenor.	Units inj.	Result.
1	27*	6 m.	Menorr.	Change of climate (Switzerland).	180	I. & S.
2	35	6 m.	Reg.	Nervous breakdown.	60	I.
3	22	20 m.	Reg. till 18, then menorr.	Thyroid defic. Treated 12 m.	160	I. & S.
4	25	5 m.	Reg. till 18.	Shock.	60	I. & S.
5	33	18 m.	Reg. till 21½.	Starting work.	460	I. & S.
6	30*	6 m.	Reg.	Foll. lactat.	150	I. & S.
7	29	18 m.	5–6 w.	?	100	I. & S. 12 m.
8	28*	6 m.	Reg.	Foll. misc.	200	I.
9	33	2½ y.	"	Foll. opern. hæmorrhoids.	100	I.
10	23*	11 m.	"	Foll. marriage.	200	I.†
11	25	10 m.	"	?	100	I.
12	16½	12 m.	"	Anorexia nerv.	120	I.
13	28	21 m.	"	Change of clim.	240	I. & S.
14	31	7 y.	"	Malnutrition.	120	I.
15	22*	3 y.	"	Self-imposed diet; obesity.	180	I. & S.
16	26	2 y.	Reg. till 21.	?	120	I. & S.
17	30*	10 m.	Reg.	Pulm. tuberc.	30	I. & S.
18	27*	21 m.	"	Foll. misc.	240	I. & S.
19	27*	12 m.	"	Anorexia foll. pregnancy.	180	I. & S.
20	28	2 y.	"	Anxiety.	120	I.

* Married. † Subsequently pregnancy.
I. = immediately. S. = subsequently.

An analysis of these results does not throw much light on the type of case which is likely to benefit. In the first place, the age of the patient does not appear to be a factor of importance, for the average age of the patients in both positive and negative series works out at 26 years. Nor do the factors responsible for the amenorrhœa appear to have influenced the results, for if a classification is made.

TABLE VI.—*Classification of 37 Cases of Secondary Amenorrhœa on an Ætiological Basis.*

Cases.	Exciting factors.	Positive results.	Negative results.
4	Change of climate.	2	2
3	Shock (psychological).	1	2
3	Following operations.	1	2
5	Anxiety and overwork.	3	3
6	Dietetic and starvation.	3	3
2	Infective illnesses.	1	1
2	Thyroid deficiency (treated).	1	1
4	Following pregnancy.	2	2
3	Following miscarriage.	2	1
1	Following marriage.	1	—
4	? cause.	3	1

of the cases on an ætiological basis (Table VI.), it will be found that positive and negative results are equally represented in the various groups.

It is possible, on the other hand, that the duration of the preceding period of amenorrhœa may have a slight influence on the outlook as regards the success or otherwise of treatment, for in the negative cases the average duration of amenorrhœa before treatment was 27 months, whilst in the positive cases it was only 19 months. This, however, is not a very striking difference. It must be pointed out, nevertheless, that in 80 per cent. of the positive cases the preceding period of amenorrhœa was under two years, whilst this was only true of 50 per cent. of the negative cases. To some extent, therefore, the shorter the period of amenorrhœa the better is the outlook from treatment. No definite statement, however, can be made on this point, for it will be seen that in Case 14 (Table V.) a positive result was obtained after seven years' amenorrhœa, whilst in Cases 4 and 6 (Table IV.) negative results were obtained in patients who had had amenorrhœa for only three and four months respectively.

Taking the group as a whole the results are encouraging, for 54 per cent. of the cases received definite and objective evidence of benefit from treatment.

Discussion.

If reference is again made to the reports of Dodds and Robertson and of Shaw, quoted above, it will be seen that our results correspond very closely with theirs, not only as to the type of amenorrhœa benefited by œstrin, but also as to the proportion of positive results obtained. We agree with them, therefore, that this preparation has a limited field of usefulness in the treatment of amenorrhœa. From a study of our cases it would appear that little benefit can be expected from this treatment in the first two groups of cases—primary amenorrhœa and primary menstrual irregularity—those, in fact, in which there is probably some developmental anomaly referable perhaps to the pituitary or other endocrine glands. There are, however, a few cases of the second group—apparently normally developed individuals with only a mild and uncomplicated ovarian deficiency—who may be expected to benefit from œstrin. The outlook, however, appears to be distinctly more promising in Group 3—secondary amenorrhœa—where ovarian deficiency develops in otherwise normal individuals who have previously menstruated normally and regularly. In this series 54 per cent. of the cases treated were definitely benefited, and in a considerable proportion of those in which menstruation returned after treatment it continued in a regular manner during the period of observation without any further injections of œstrin.

The question which naturally arises is as to whether the bleeding which may occur after treatment with œstrin is a true menstrual discharge or not. It is known that the administration of this hormone to lower animals such as the rat produces œstrus, but as Shaw points out, it is difficult to believe that there is a close parallel between such phenomena and menstruation in the human female. It is almost certain that for the latter to occur the presence of a corpus luteum is necessary, for menstrual hæmorrhage is produced by disintegration of a premenstrual endometrium, in the building up of which the corpus luteum is essential. For the production of œstrus, on the other hand, the corpus luteum is not necessary. This has been shown quite clearly. Shaw himself takes the view that the administration of œstrin is extremely unlikely to have a specific action in inducing menstruation in the human female, but he suggests that it might produce such an effect by stimulating sluggish ovaries to produce active follicles, and so by a trigger effect initiate the factors which would ultimately result in the menstrual discharge.

There are certain features about our successfully treated cases which suggest that this hypothesis of Shaw's is a likely explanation of some of our results at any rate. In the first place, there is usually some delay in the production of menstruation after the onset of treatment. This might be accounted for on the basis that the action of œstrin is cumulative. It would explain those cases in which menstruation occurred during the course of injections—perhaps the common finding. In a number of our cases, however, bleeding did not occur until a fortnight or so after the course of treatment had finished, a result which is difficult to reconcile with a direct and specific action of œstrin in producing menstruation. It could, however, be accounted for on the "trigger action" hypothesis, menstruation resulting from the stimulation of sluggish ovaries with the production of active follicles, the time interval being required for the development of the follicular cycle.

There is another feature in some of our cases which suggests that œstrin acts by stimulating defective ovarian activity rather than by specifically inducing bleeding, for in more than half the positive cases menstruation continued at regular intervals after the original loss without any further treatment. Moreover, although it is obviously inadvisable to draw conclusions from isolated cases, one patient, Case 10, Table V., who was sent for treatment for secondary amenorrhœa of 11 months' duration and sterility, menstruated after 200 units of œstrin and within the next few weeks became pregnant, ultimately giving birth to a full-term healthy child, whilst a second patient, Case 6, Table III., also sent for amenorrhœa and sterility, menstruated immediately after 180 units of œstrin, and is now in the third month of pregnancy. Sequences of events such as these suggest that the normal follicular cycle may return after treatment. We note that Shaw himself reports a similar case of a patient with amenorrhœa of two years' duration, in whom menstruation returned after œstrin, and in whom after three normal menstrual periods in the following three months pregnancy supervened.

Summary.

1. The results of treating 63 cases of ovarian deficiency—amenorrhœa of various types—with an accurately standardised œstrin preparation are described. It will be seen that these results agree very closely with those of Dodds and Robertson, who carried out similar investigations with the same preparation. 2. In primary amenorrhœa the results were negative. In primary menstrual irregularity menstruation was regularised in 6 out of 19 cases. In secondary amenorrhœa positive results were obtained in 20 out of 37 cases (54 per cent.). In 12 of the successfully treated cases the subsequent rhythm of menstruation was normal without any further treatment. In two of these patients, who were sterile, pregnancy subsequently occurred.

We wish to express our gratitude to Messrs. Boots Pure Drug Company for so generously providing us with supplies of œstrin, and to Prof. Dodds for enabling us to carry out a parallel investigation with his own. We also wish to express our indebtedness to the members of the staff of St. Thomas's Hospital, who have kindly sent us their cases for investigation and treatment.

(*References at foot of next page.*)

ASTHMA IN CHILDREN RELIEVED BY INTRANASAL OPERATION.

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Before the Clinical Section of the Royal Society of Medicine in March, 1930, I showed a child who had recovered from spasmodic asthma as the result of removal of the hypertrophic portions of the middle turbinated bodies. I was then asked "in how many instances such an operation had failed to give relief" and I have investigated my notes in order to give an answer to this question.

A SERIES OF CASES.

I found that in a series of cases of children referred to me, up to the time of the meeting, by physicians, as suffering from asthma, there were 18 in whom there were intranasal abnormalities and in only one of these did the intranasal operation fail to procure some measure of relief. In this one (No. 4) I elicited on inquiry that there was no improvement and that the patient was rather worse after operation. On referring to my notes of the case I found that I did not see the patient again after the partial resection of the left middle turbinal and, therefore, I had no opportunity of applying the little "finishing touches" which are often of so much importance. Moreover, there was a deflection of the septum which I had left to be dealt with later, if necessary. The results were as shown below:—

1. Boy, aged 14. Enlarged portions of middle turbinals and oids removed Jan. 8th, 1925. Report March, 1926: plete relief.

Boy, aged 9. Removal of tonsils and adenoids Oct. 8th, 25 (attacks less frequent). Enlarged portions of middle urbinals removed August 2nd, 1926 (no more attacks). Recent report: complete relief.

3. Boy, aged 7. Adenoids removed, with some improvement, but not much, Oct. 29th, 1925. Removal of portion of left middle turbinal Sept. 2nd, 1926. Report March 1st, 1927: complete relief.

4. Girl, aged 5½. Enlarged tonsils, adenoids, and portion of right middle turbinal removed June 24th, 1926. Improvement for a time. Asthma returned after bronchitis. Operation on left middle turbinal May 5th, 1930. No improvement. Deflected septum requiring resection.

5. Boy, aged 7½. Adenoids removed first (no relief), then removal of enlarged middle turbinals Nov. 2nd, 1926. Report June 22nd, 1928: complete relief.

6. Boy, aged 10. Removal of enlargement of middle turbinals Feb. 17th, 1927. Recent report: complete relief.

7. Girl, aged 11. Removal of adenoids and posterior extremities of inferior turbinals, May 12th, 1927. Report Nov. 21st, 1929: complete relief.

8. Boy, aged 9. Removal of portions of middle turbinals May 16th, 1927. Relief immediately after first operation; then greater relief after further treatment May 6th, 1930. Recent report: one severe attack, otherwise fewer and less severe.

9. Boy, aged 3½. Adenoids and enlargement of middle turbinals removed Jan. 19th, 1928. Relief at time. Subsequent severe illness with recurrence of asthma. Further portions of middle turbinals removed recently (1930). Great relief for a time. Recently pleurisy and bronchitis, with return of asthma. (Temporary relief.)

10. Boy, aged 8. Removal of enlargement of left middle turbinal Jan. 19th, 1928. Report Nov. 15th, 1928: complete relief.

11. Boy, aged 8. Removal of tonsils and adenoids Jan., 1928 (no relief). Enlargement of middle turbinals removed Feb. 16th, 1928 (some relief). Submucous resection of deflected septum Dec. 11th, 1928. Report Jan. 22nd, 1929: complete relief.

12. Boy, aged 10½. Removal of adenoids and enlargement of middle turbinals May 10th, 1928. Recent report: complete relief.

13. Boy, aged 8. Submucous resection of deflected septum May 29th, 1928. Report May 6th, 1930: relief (attacks less severe). Nose still requires treatment.

14. Boy, aged 7. Middle turbinectomy Nov. 8th, 1928 (tonsils and adenoids had been removed twice without relief). Report April 29th, 1929: complete relief.

15. Boy, aged 10. Portions of both middle turbinals removed (very hard) Sept. 29th, 1929. Report May 1st, 1930: complete relief.

16. Girl, aged 8. Adenoids and portions of both middle turbinals removed Oct. 9th, 1929. Recent report: complete relief.

17. Boy, aged 10. Portions of both middle turbinals removed Oct. 9th, 1929. Recent report: complete relief.

18. Boy, aged 13. Removal of portions of both middle turbinals March 1st, 1930. Report April 1st, 1930: complete relief (confirmed by letter, Jan. 9th, 1931).

COMMENTARY.

The number may appear small, but among the reasons for this a most important one is that the operation in children has special difficulties and dangers so that it should not be lightly undertaken, as will be obvious when its peculiarities in these subjects are considered.

The chief point is that on account of the smallness of the passages, more forcible dilatation is required than a child could tolerate without general anæsthesia. Such being the case the semi-recumbent attitude of the anæsthetised child involves the risk of the detached portion of the middle turbinated body dropping back into the pharynx with the probability of it being swallowed but also the possibility of it being inhaled into the air-passages. I have on several occasions seen the fragment fall back, but fortunately without the latter result. To prevent a repetition of this cause for anxiety, I have adopted the following mode of procedure which I now recommend.

The nasal passages are sprayed by means of a very fine nasal spray-producer with such a fluid as—

Novocain	gr. 10
Adrenalin solution (1 per 1000)	13 ♏
Solution of sulphate of potash (2 per cent.) ..	1 dr.
Solution of carbolic acid (0·5 per cent.) up to ..	½ oz.

which is anæsthetic, hæmostatic, and antiseptic without any considerable toxicity. A small pledget of non-absorbent cotton-wool with a thread attached to it and moistened with the fluid is then inserted so as to come in close contact with the middle turbinated bodies. The anæsthetic is then administered and the head of the table raised till the patient is in the semi-recumbent position; the light, from a forehead lamp or mirror, is then turned on and a powerful dilating nasal speculum, such as the smallest of Killian's set, is then introduced and the pear-shaped anterior end and neck of the middle turbinated body identified. The cotton-wool should now be removed and a little pure adrenalin solution (1 per 1000) applied on a fresh pledget. If the middle turbinal is not freely exposed owing to deflection of the septum or such other obstruction as a hypertrophied anterior lip of the hiatus semilunaris, Killian's second speculum may be introduced, after removal of the cotton-wool, so that one blade lies on each side of the middle turbinal which is thus isolated between the two blades. The "neck" of the turbinated body is then notched by means of a flat Grünwald's nasal

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(*Continued from previous page.*)

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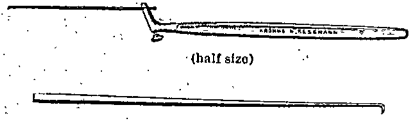
punch-forceps. A snare is now passed over the semi-detached body of the turbinal and made to cut through it. It is at this stage that there is a risk of the detached portion slipping back into the pharynx. To prevent this the fragment has to be secured by means of a sharp hook (see Figure), and this has to be done with great celerity, more especially if there is much hæmorrhage. To hold the speculum, the snare and the hook requires three hands and I find it best to hold and direct the speculum with my left hand, apply and tighten the snare with my right one, then hand this to a nurse or assistant, when I take up the hook in my right hand. The assistant then closes the snare *without pulling it forward away from the body to be snared*, which I secure with the hook and draw out without, if fortunate, much fishing.


(half size)

(full size)

Foreign body hook.

In view of the numerous points from which the asthma reflex may be excited, it would be strange if treatment affecting one of these should always produce complete and permanent relief. Thus, an attack of bronchitis may determine the recurrence of spasmodic bronchial contraction, as in at least two of my cases in which the extinction of the nasal element had brought about only temporary relief. The relative uniformity with which the intranasal operation has in appropriate cases been beneficial goes to confirm W. E. Dixon and T. G. Brodie's statement that "the upper and posterior part of the nasal septum is the best area from which to produce the reflex."[1]

It is, of course, to be noted that the operative treatment was confined to those cases of asthma in which the abnormality in the nose was obvious, and that in the 18 cases relief was afforded in all but one, and—as shown by subsequent reports—complete and permanent in the large majority—namely, 14.

In a child the persistence of asthma in spite of general treatment is so serious a handicap that an operation offering such great probabilities of relief ought to be very favourably considered and only omitted with a sense of serious responsibility.

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CLINICAL AND LABORATORY NOTES

A CASE OF AGRANULOCYTIC ANGINA.

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An extreme leucopenia affecting granular leucocytes, associated with extensive superficial necrosis of the mucous membrane of the mouth and pharynx, are the essential features of agranulocytic angina, a disease now well recognised in the United States and in Germany. For some reason it appears almost entirely to have escaped recognition in this country, the only references to it being Batten's case,[1] and a subsequent editorial[2] in The Lancet on "agranulocytosis" in its general aspect.

The condition was originally defined and named by Schultz in 1922, and since that time increasing numbers of cases have been reported in German and American literature; these reports are reviewed in Batten's paper. In spite of some very detailed observations, the origin of the disease is still quite unknown, and there is still a difference of opinion even as to the site and general nature of the primary lesion.

The following case is typical:—

DESCRIPTION OF THE CASE.

The patient, aged 50, was the wife of a farmer and had led an active and healthy life. For two years before the onset of the illness she had suffered from menorrhagia, and within three weeks of the onset, the nursing of an adult daughter suffering from measles had involved her in heavy extra work.

The illness began on Nov. 11th, 1930, with lassitude and a sore throat; at this stage there was injection of the fauces, with moderate fever (temperature 101° F., pulse-rate 90). During the following two days the soreness of the throat increased, being thereafter described by the patient as "pain" in the throat, and was accompanied by stiffness of the neck. On Nov. 13th, a few small white oval patches about 5 mm. in diameter had appeared on the soft palate. On the following day these white areas had greatly increased in size and numbers, and were extending forwards, involving the hard palate and the mucous membrane of the cheeks, which appeared swollen, and backwards, involving the pharynx. At the same time she complained of pain in the legs, and tenderness was elicited on pressure over the tibia and femur. Moderate fever persisted. The urine was found normal except for the presence of a trace of albumin.

Bacteriological examination of the white exudate from the throat showed, in direct films, numerous Gram-positive cocci, a few yeasts, and no Vincent's organisms. In culture it showed many and various non-hæmolytic streptococci, a few hæmolytic streptococci, fair numbers of yeasts of the thrush type, and no Klebs-Löffler bacilli. On the assumption that the condition was, at least in part, thrush, potassium iodide was administered by the mouth, and in the anticipation that continued unfavourable progress might be due to the activities of the hæmolytic streptococci present, daily injections of sensitised streptococcus vaccine were begun. The bacteriological examination and the institution of this treatment took place on Nov. 17th.

During the following four days the condition steadily progressed. The lesions in the mouth and throat extended and coalesced, with the result that the whole of the buccal, faucial, and pharyngeal mucous membrane was eventually covered by thick white exudate. This material could be imperfectly rubbed or syringed away from those parts in which it was accessible, leaving a raw surface to which some of the material was still adherent. The patient became increasingly drowsy, and passed into a semi-conscious and immobile condition comparable to the "typhoid state"; the degree of fever increased somewhat, the average evening reading being 102°.

On Nov. 21st the following pathological data were obtained:—

Blood Count.

Red blood-cells	4,100,000 per c.mm.
Hæmoglobin	70 per cent.
Colour-index	0·85
White blood-cells	2000 per c.mm.

Differential Count.

Polymorphonuclears ..	11 per cent.	220 per c.mm.
Lymphocytes	50 ,, ,, ...	1000 ,, ,,
Eosinophils	0 ,, ,, ...	0 ,, ,,
Basophils	0 ,, ,, ...	0 ,, ,,
Large mononuclears ..	33 ,, ,, ...	660 ,, ,,
Lymphoidocytes ..	6 ,, ,, ...	120 ,, ,,

The red cells showed moderate anisocytosis and poikilocytosis and occasional polychromasia; a few nucleated types, chiefly megaloblasts, were present.

Blood Culture.—Varying amounts of blood sown in broth, aerobic and anaerobic subsequently showed no appearances suggesting growth during four days' incubation.

Blood Coagulation Time.—This was not deliberately estimated, but it was observed that the blood in the above cultures, and some in a tube which had been reserved for any purpose for which serum might be required, showed no signs of coagulation about an hour after collection; the cells were deposited in the tubes just as if the blood had been oxalated, coagulation occurring during the second hour.]

The blood count was held to establish a diagnosis of agranulocytic angina, and the prognosis, in view of the stage of the disease and the state of the patient, was regarded as almost hopeless. The measures adopted were decided upon with the object of stimulating the bone-marrow; they were injections of nucleic acid, and the oral administration of extracts of liver and bone-marrow. On Nov. 23rd signs of pneumonia appeared; death occurred in the early hours of the 24th. A post-mortem examination was not obtained.

A blood film was made half an hour before death, and showed an obviously much increased number of leucocytes in the following proportions:—

Polymorphonuclears	58	per cent.
Lymphocytes	17	,, ,,
Eosinophils	0	,, ,,
Basophils	0	,, ,,
Large mononuclears	2	,, ,,
Myelocytes	23	,, ,,

The clot from one of the blood cultures was ground up on the following day, and injected intravenously into two rabbits, and intraperitoneally into one guinea-pig. These animals have subsequently shown no signs of disease.

COMMENT.

That this was a case of agranulocytic angina is disputable, presenting as it does not only the cteristic blood count (with the granular leucocytes duced almost to extinction) but all the constant linical features of the disease. The age and sex of the patient are characteristic, the nature and extent of the lesions in the mouth and throat, the inexorable progress and fatal termination. The absence of evidence of any specific microbic infection is characteristic, and the absence of any response to treatment. (It may be added that blood transfusion was considered in this case and rejected, as the experience of others has been that it is useless. A treatment which has given hopeful results is mentioned by Molloy[3]—viz., small doses of X rays to the long bones.)

Several minor features of the case are worthy of notice. Pain in the long bones of the legs has not apparently been recognised before as a significant symptom; it may possibly be the result of changes in the marrow. Extreme delay in the coagulation of the blood in vitro has also not been noted constantly, although Kastlin[4] and Friedemann[5] both mention delayed coagulation rates, and the former a "bleeding-time" of 25 minutes. The condition of the blood immediately before death, when granular cells had returned, with a considerable proportion of myelocytes, is susceptible of several explanations; the onset of pneumonia, the effect of treatment, especially nucleic acid, and the natural reversion to bone-marrow activity which has been observed in recovering cases; Krumbhaar[6] describes such a case, in which numerous myelocytes appeared at one stage.

No further light is thrown on the pathogenesis of the disease. It is not, however, out of place to add that all the evidence at our disposal points to the bone-marrow as the site of the primary lesion. A failure in the production of granular leucocytes may reasonably be held to reduce the resistance of the tissues to infection, and in a situation where potentially pathogenic bacteria are most numerous—namely, the mouth and throat—the comparatively defenceless mucous membrane yields to their attack. An exact parallel is afforded by the angina commonly seen in the terminal stages of leukæmia, unless Easton's[7] contention, with which we disagree, that the leukæmia may be secondary to the angina, is correct. Two interesting observations support this hypothesis, Roberts and Kracke's[8] case, in which granulocytopenia was noted *before* the throat lesion appeared, and Buck's,[9] in which the lesion was not in the mouth, but the anus, another situation in which potentially pathogenic bacteria are numerous. As to the essential nature of the bone-marrow lesion there is no evidence at all. The comparable and known effects of poisoning by benzol would suggest a toxic origin; on the other hand, the only other condition known in which the leucocytogenic function of the marrow is so disastrously disordered is leukæmia, and the analogy with this disease is a definite one, though hardly such as to justify an attempt at identifying one as a form of the other.

The publication of this single case appears justified by the fact that agranulocytic angina has hardly begun to be recognised in this country, although it has become the subject of much writing and speculation elsewhere. There are reasons for believing that the disease is by no means extremely rare, and if blood counts are performed on patients having extensive oral lesions of the type described, sufficient cases will almost certainly be recognised to afford adequate opportunities for further study.

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TRAUMA AND RENAL STONE.

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SINCE almost every author dealing with renal disease ignores trauma as a causal factor in the formation of stone in the kidney, the following case is of interest.

On May 11th, 1920, a man was admitted to Poplar Hospital suffering from abdominal injury. He gave the history that a few hours previously, whilst at work on a jetty, he had fallen into the water. Whilst falling his abdomen struck a projecting part of the jetty. He was examined by an ambulance man who told him that there was very little wrong. He went home and there passed urine containing blood. He was promptly sent to hospital.

On arrival he was suffering from shock. He complained of pain in the right loin where there was tenderness on palpation and dullness on percussion. A catheter specimen consisted almost entirely of blood. A diagnosis of lacerated kidney was made. Conservative treatment was adopted and he made moderate progress, though on the second day the temperature rose to 100·7° F. and remained irregular and above normal for 14 days. He was discharged from the ward on June 4th. The urine was then clear. He remained under observation for another six weeks and finally resumed his ordinary occupation. He was then free of any urinary symptoms. Up to this time no X ray examination had been made.

I saw him again in May, 1930. He said that for the last month he had been having dull pains in his right loin and that he had been passing a sediment in his urine. He stated that before the accident of the previous year he had not had any trouble of this nature. On examination his urine was alkaline and contained pus. X ray examination showed three groups of stones situated close to each other in the right kidney. There were no stones to be seen in the left kidney. There was also a large stone in the bladder.

The man was readmitted to hospital on July 21st. On August 4th he was operated upon and the right kidney exposed through the usual lumbar incision. The kidney was slightly enlarged and at the lower pole there was a hydronephrotic sac about one inch in diameter. This sac was separated from the rest of the kidney by a thin transverse white line of fibrous tissue which had the appearance of scar tissue. The sac was opened and in it was found a group of ten small urate stones. Within the pelvis of the kidney were three stones about the size of cherry stones. These were removed. In spite of needling and incision of the cortex the remaining group of stones, as seen on the film, was not found.

The patient made a good recovery and was sent to our convalescent home on August 28th. There was then pus but no blood in the urine. On Sept. 19th he returned from the convalescent home. On Sept. 21st the vesical calculus was removed through a suprapubic incision. This stone was about an inch in diameter and consisted of phosphates surrounding a small urate nucleus. He made a good recovery and was discharged from the ward on Oct. 7th. The urine was then acid in reaction and contained no pus, blood, or albumin. He returned to work about four weeks later.

The history of the case and the operative findings seem to point to a relationship between the injury and the formation of the stones. I am quite prepared to admit the possibility of the presence of stones before the injury and I am unable to prove that the stones were not present before the accident owing to the fact that no radiogram was taken during his first stay in hospital. Nevertheless, the fact that there were no signs or symptoms of urogenital disease before the injury suggests that the injury was the starting point of the stone formation. This suggestion is confirmed by the operative findings. It is natural to assume that the scar tissue was formed as a result of the laceration of the kidney. The stones were in close relationship to the scar tissue. It would not be unreasonable to assume that the stones were formed following upon stasis and infection created by injury to the lower pole of the kidney.

This case has been of considerable medico-legal interest. The employers of the man admitted liability for the accident and he was paid the usual weekly compensation for the period during which he was indisposed after the accident. But they were not prepared at first to admit that the presence of stones in the kidney 12 months afterwards was a result of the accident, and they accordingly refused liability. It was however found rather difficult to prove that the accident was not a cause of the stone formation, and the matter was finally settled out of court by a payment to the man of a lump sum sufficient to pay his weekly compensation and a further amount sufficient to cover future contingencies.

SUPPURATIVE ARTHRITIS DUE TO A HÆMOPHILIC BACILLUS.

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THE recovery of hæmophilic organisms in suppuraive arthritis in spite of their widespread distribution s apparently very rare. Last year Shaw[1] described a case which had come under his own notice, and also gave a full account of the only 14 cases which he could find reported. A case not included in this list was described by Kubota,[2] and Braxton Hicks[3] has published an account of suppurative meningitis due to a similar organism. The disease is without exception confined to infancy.

A boy, aged 9 months, was admitted into Westminster Hospital under Dr. Donald Paterson with the story that for a fortnight he had been unable to stand on his left leg, and for two days had been feverish. The temperature was 103° and the pulse-rate 150. He was a fine, breast-fed infant, but sallow and toxic-looking. The left thigh was kept flexed, and there was slight swelling, but no reddening, of the hip. The skiagram was negative. The temperature remained high and the baby refused to take food properly. Three days after admission an abscess appeared in the right thenar eminence. The abscess was opened and 20 c.cm. of yellow-green, creamy pus were aspirated from the left hip-joint by Mr. G. T. Mullally. The organism to be described was recovered from both abscess and joint. Aspiration was performed again five days later, and three days afterwards Mr. Mullally opened and drained the joint anteriorly and posteriorly, and a double spica plaster bandage was applied. The operation was followed at once by subsidence of the temperature and improvement in general condition. The plaster was kept on for three weeks, and for a fortnight after its removal the baby ran a temperature, but subsequently convalescence was rapid and uneventful. Three months afterwards a skiagram by Dr. W. H. Coldwell showed partial dislocation of the joint with some excavation of the acetabulum, but only slight shortening was apparent and movement was free except for a little limitation of abduction.

Samples of pus from hand and hip showed a very small, slender, Gram-negative bacillus, occasionally occurring in somewhat longer forms. It resembled in many respects the influenza bacillus. Culturally it was most difficult to grow. In primary culture it was only obtained when much of the pus itself was inoculated on to the medium. For its further bacteriological investigation I am indebted to Dr. J. M. D. Hocking. Growth was obtained on agar and glycerin agar, and to a lesser extent on blood agar and Löffler's serum, but only in the presence of a large amount of attendant pus. No growth was obtained in blood broth, or on potato or Bordet-Gengou media. The organism was non-motile. All attempts at secondary culture on media previously successful were fruitless, with the exception of subcultures made on to agar either mixed with or smeared with trypsinised sheep's red corpuscles in strengths from 2 to 4 per cent. On this medium in subsequent cultures quite copious growth was obtained. Guinea-pigs were inoculated intraperitoneally with both pus and bacterial emulsions. No pathogenic effect was observed on these animals. This organism is apparently a distinct member of the group of hæmophilic bacilli, of which *B. influenzæ* and *B. pertussis* are also members.

According to Taylor[4] these cases fall into two groups: (*a*) suppurative arthritis only; (*b*) suppurative arthritis with fatal pyæmia and meningitis. Apart from the rarity of the infecting organism, a noteworthy feature of this case is the baby's recovery in spite of pyæmia, for, although no attempt at a blood culture was made, it seems likely that the thenar abscess indicated a generalised blood infection. The result may be attributed in part at least to the fact that the baby had been breast-fed, but it also seems probable that the organism was not highly virulent, in view of its non-pathogenicity to guinea-pigs and of the evident chronicity of the infection.

My thanks are due to Dr. Donald Paterson for permission to publish this case.

References.—1. Shaw, F. W.: Virginia Med. Monthly, 1930, lvii., 404. 2. Kubota, I.: Orient. Jour. Dis. Inf., 1929, vi., 24. 3. Hicks, J. A. Braxton: THE LANCET, 1927, ii., 497. 4. Taylor, J. F.: Ibid., 1927, i., 1341.

MANCHESTER ROYAL INFIRMARY.—In spite of the depression of trade, subscriptions to this hospital are higher than they were last year. The ordinary income is £5000 down, but the past year shows only the modest deficit of £639.

MEDICAL SOCIETIES

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

At a meeting of this Society held on Feb. 20th, the chair was taken by Dr. J. HOWARD-JONES, Past-President, and a discussion on

Bacillary Dysentery in Great Britain

was opened by Dr. J. A. CHARLES, who traced the history of the disease from its first recognisable appearance among Henry II's troops in Ireland in 1172. Most of the early records concerned the deaths of famous men—soldiers and sailors who were by their profession almost predestined to it. Willis and Sydenham had described it. The first tables of the Newcastle Dispensary showed 44 cases of dysentery. In the first decade of the registration of deaths there was an average of 100 fatal cases annually, but by 1860 it had almost disappeared—perhaps owing to the great change in habits and the growth of cleanliness. Attention had again become directed to it about 1900, but only in 1909 had an organism been isolated from a fatal non-institutional case. During the war convalescent cases had started mild epidemics, and in 1919 the disease had been made notifiable.

During the last ten years there had been a number of outbreaks all over the country, and there seemed to be endemic centres. Despite this, dysentery was ways referred to as "of exotic origin." Dr. D. Nabarro had shown its frequency in children in this country.

THE DISEASE IN NEWCASTLE OF RECENT YEARS.

From 1903 to 1919 there had been no cases at the Newcastle-upon-Tyne Dispensary and from 1919 until 1928 only a few cases had been seen annually, but in 1928 three persons had suffered from Flexner dysentery and two boys had died. The practitioners of the city had therefore been circularised and over 500 suspicious cases had been notified, with 280 proved cases and 18 deaths. Six types of bacillus had been incriminated. Cases were of two types: acute and enterocolic. The former was a typical dysentery with a temperature of about 101° F. for three or four days. Blood and mucus were seen on the second and third days, and a formed motion was passed again about the eighth day. Tenesmus was common. Many complications were seen, but relapses were rare and there were no eye-conditions. The case-mortality was 2·2 per cent. The other type was fulminant and the patients died so rapidly that they seemed to have been poisoned. Toxæmia rather than diarrhœa played the prominent part. No form of treatment had proved of the slightest benefit.

On the whole the Sonne bacillus caused a milder disease and a green diarrhœa rather than a bloody one. Wrong diagnoses included food-poisoning, intussusception, paratyphoid, Henoch's purpura, encephalitis lethargica, facial paralysis, and hæmorrhoids. The treatment was rest in bed, light diet, saline lavage, serum (especially for the tenesmus of adults), grey powders, and sodium sulphate.

Outbreaks had been sporadic, domiciliary, and epidemic. Simultaneous onset in several members of the family was rare; usually one child infected another. No age was exempt; cases ranged from 5 months to 71 years of age; the disease was commonest between 1 and 2 years of age and most fatal between 5 and 15 in boys. Breast-feeding seemed to protect the infant. There was no evidence that Flexner and Sonne infections differed in age and sex distribution. Outbreaks occurred in every month of the year, but the Sonne infections seemed to show a spring peak and a more important one in the early autumn. The Flexner group showed similar peaks, but the early one was the greater. The Sonne infection had a claim to be regarded as a form of summer diarrhœa.

All possible sources for infection had been investigated, with entirely negative results. Overcrowding seemed to be important. Newcastle had 33·6 per cent. of overcrowded persons at the last census, and 53 per cent. of the patients had been living in overcrowded conditions which made cleanliness and kitchen hygiene almost impossible. The missed case was the chief source of infection.

The surrounding 600 square miles had shown 20 outbreaks during the last three years, in many instances in socially and geographically remote areas. This supported the view that bacillary dysentery was endemic in Great Britain; it had only to be sought throughout the country to be found.

BACTERIOLOGICAL FINDINGS.

Dr. S. H. WARREN described the laboratory aspect of these cases. The diagnosis had been made by the signs of acute colitis; the bacilli were seldom found except in the presence of muco-pus. It was essential that the doctor should himself see the stool and send the blood and pus—not only fæces—in glass capsules as soon as possible after they were passed. Organisms ceased to be recoverable in six to eight hours. Post-mortem specimens should be taken from an inflamed portion of ileum and colon, ligatured and removed unopened, for bacilli were more often found in the intestinal wall than in the fæcal masses. The diagnosis could be made in 48 hours by picking off likely colonies for agglutination tests and a certain diagnosis could be given in 3 or 4 days, though sugar tests were watched for 9 or 10 days.

The Flexner group was the largest—70·7 per cent.—and had been classified by the English method into five types (Andrewes and Inman), of which the commonest in this investigation was type W, followed by Z. No V strains had been found, and very few Y strains. No variations from the ordinary sugar reactions had been observed. There had been a few mixed infections. The Sonne bacillus had been reported from all over the world and all parts of the United Kingdom; it had been found in 26·4 per cent. of the Newcastle cases. It gave smooth and rough colonies; the former were usually present in acute cases but tended to become rough. The two strains gave different agglutination reactions. The agglutination and sugar reactions were, however, quite definite. The Newcastle bacillus looked like a Shiga bacillus on primary isolation but did not agglutinate with that organism. It had definite reactions which identified it. It had been found in 2·8 per cent. of cases.

Post-mortem appearances had been those of acute enteritis without peritonitis and accompanied by toxic changes in heart, liver, and spleen. The diagnosis could only be made bacteriologically. The organism might be found in stomach, intestine, spleen, or liver.

THE CARRIER PROBLEM.

The carrier seemed to be the only real source of new cases. Probably most people passing bacilli had continuing ulceration, with pus-pits in the colon which periodically discharged organisms. The Sonne bacillus had been isolated from typhoid and Flexner cases. Agglutination reactions had not been much used owing to the difficulty in deciding what a positive result was, but they were useful as confirmatory evidence. Cases of infection might be so mild that the doctor was not consulted at all. Fewer outbreaks had occurred since cases had been isolated in hospital.

The CHAIRMAN remarked that the attention of epidemiologists in this country had been turned away from gastro-intestinal disease for many years, but clearly it might at any time become a problem.

Dr. A. F. ADAMSON asked whether the condition now described had been endemic throughout history or had been imported recently.

Dr. EPPYNT PHILLIPS asked if jaundice had been present.

Dr. CHARLES replied that jaundice had never been present and that they believed the condition had remained endemic for a very long time but had seldom been correctly recognised. Only four ex-Service men with a history of dysentery had been found in the course of the Newcastle investigations. The town had a trade with the Baltic and this might constitute a source of infection.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

AT the annual general meeting of this Association, held on Feb. 20th under the presidency of Dr. G. E. FRIEND (Christ's Hospital), a discussion on

Impetigo in Day and Public Schools

was opened by Dr. W. J. O'DONOVAN, who read the paper which appears in full on p. 461.

The PRESIDENT said he did not think impetigo was so prevalent in the large public schools as in elementary schools; but when cases were encountered the medical officer was sometimes puzzled as to how to treat them. The figures given for London by Dr. O'Donovan seemed to him to show not so much a real seasonal incidence as a neglect of treatment and care of the boys during holidays; the apices of the incidence curves in May and September supported that idea. At Christ's Hospital school the disease seldom caused trouble during the summer term. Impetigo incidence also varied with football and to some extent with the weather. A greater prevalence of the disease during a damp autumn led him to think the causal microbe might be an invader from the soil. For a boy at the school to conceal the fact that he had a septic sore was accounted a crime; it seldom occurred, and when it did rigorous disinfection of the clothing of both teams was carried out. In a full school segregation and isolation was not always practicable. He questioned the wisdom of Dr. O'Donovan's advice to refrain from covering lesions with a bandage when either the discharge or the incrustation was great. If the boy's resistance was seriously lowered, the impetigo was likely to be stubborn. He favoured starch poultices on encrusted areas, varied by frequent hot water lavage. With the proviso that no case should be nursed for any length of time without supervision he was in full agreement.

Dr. L. R. LEMPRIERE (Haileybury) was of the opinion that impetigo was now distinctly less common than 30 years ago; that was an improvement largely due, he thought, to the greater care devoted to the sterilisation of clothing. Scrum-pox was an appropriate popular name for it, as it was more common in schools at which Rugby was the more frequent form of football. Many cases of impetigo seemed to run their natural course, whatever kind of treatment was adopted. He thought the lesions should be covered by dressing. When the exudation was only slight, the solid silver nitrate stick gave good results, and as the boys did not usually object to the disfiguring black spots the face was not covered. He had tried in three cases a vaccine containing equal parts of staphylococci and streptococci, and in two the condition cleared up after three injections.

Dr. G. L. BUNTING (Tonbridge), speaking of the general view that impetigo was a streptococcal disease, said he had found cases of the condition yield to stock staphylococcal vaccine. His chief trouble was with what were known as dripping cases, as from them the disease appeared to spread to others with exceptional speed. They also seemed to be very liable to a flare-up for no obvious reason.

Dr. W. ATTLEE (Eton) spoke with approval of the use of acriflavine for these cases; it had given, in his hands, better results than silver nitrate.

REPLY.

Dr. O'DONOVAN said he was not able to attribute to vaccines any specific action in this disease. But good results had followed their use as a form of shock tactics. In the chronic, apparently incurable cases, with periodic exacerbations, there was generally a seborrhœic basis. Hospital technique was needed for these cases, and patience in their treatment. To bring about a cure many of the patients required epilation of the hairs of the scalp by X rays, and production of an artificial pyrexia (103° to 104° F.) by means of T.A.B. vaccine. Three-fourths of the cases could be cured by this combination. The question of the dripping cases raised that of diathesis. Under the influence of the same micro-organism, or the same mixture of pathogenic microbes, different types of patient reacted in a different way and to a different degree. Some believed in the existence of an exudative diathesis, to which category drippers would naturally belong. Swabbing these cases with 1 per cent. aluminium acetate was good treatment. Drippers were usually hypersensitive children, mentally as well as dermatologically, and bromides might be more helpful than applications to the skin. In long-continued cases one must always be on the look-out for a nervous habit, which took the form of a perpetual picking and scratching with dirty finger-nails at the site of a lesion or lesions, such as at the side of the nose. One boy was in this condition for 18 months; he was a nail-biter and bed-wetter. Usually it was inadvisable to retain perspiration and excretions under a bandage. Private patients he was able to cure quickly by the application of ultra-violet irradiation. Many uncomplicated and straightforward cases of impetigo could be cured by frequent soap and water without any medical dressings. Silver nitrate stick might be useful in school practice; he did not adopt it in hospital.

MEDICAL SOCIETY OF LONDON.

At a meeting of this Society on Feb. 23rd, with Dr. R. A. Young, the President, in the chair, Mr. A. Dickson Wright read a paper and showed a cinematograph film on the

Treatment of Indolent Ulcers of the Leg.

The paper appears in full at p. 457.

Sir **Almroth Wright** said he considered Mr. Dickson Wright's work a great intellectual and humanitarian achievement. He had, however, a different explanation for the ulcers—namely, that the disease was bacterial. All microbes grew well in œdematous tissue. Ordinary tissue was a closed network, or meshwork, and if a microbe were between the meshes, the white corpuscle would come out from the capillaries and attack it and pick it up without trouble; hence the microbe had a bad time in normal tissue. But when there was an increase of fluid in the tissues and the spaces were accordingly larger, the white cells, being unable to swim, gravitated to the bottom of the pool and the microbes were not interfered with by these corpuscles, and so flourished. It was this more fluid condition which existed in the varicose legs, and made them an easy prey to microbic invasion. Sabouraud was responsible for the statement that a man emerging from a Turkish bath course had a largely increased colonisation of microbes on his skin. White corpuscles coming on to the surface disintegrated and set up a digestive process on the skin. A varicose ulcer was a site where, because of the quantity of fluid, microbes were able to grow freely, and because tryptic fluid was also present, digestion of skin and tissue proceeded, and so the ulcer got larger and larger. To prevent a blister of the skin from suppurating one pricked it and released the fluid. For bad infections the surgeon sliced the tissue down with the same object; the part was rested by keeping the patient in bed, and the fluid was let out. Cutting slices was a barbarous method, applying hydrostatic pressure was a good one. Another method which the speaker used was to put on a lymph leech—a suction apparatus—but not for varicose ulcers. It was unfortunate that this pressure method was not thought of during the war; it emptied the fluid from the whole area, even to the extent of a gallon, and by this process tissue which was a good nidus for microbes was converted into material in which it was difficult for them to grow.

Sir **Ernest Graham-Little** spoke highly of the method in Mr. Dickson Wright's hands; it had created a revolution in the treatment of this very troublesome condition. He was especially struck by the fact that the patients did not come back. He leaned to the physical rather than the bacteriological explanation of the ulcers.

Mr. **W. Turner Warwick** spoke on the mechanics of the venous return, and did not approve of the suggested name "gravitational ulcer." It had been shown that the blood pressure in the veins below the knee, in the varicose area, was similar to that in the unaffected areas. Varicosis, he contended, was produced by incompetence of the valves in the perforating veins, of which the terminations of the internal and external saphenous represented highly specialised varieties. By "the abdominal reflux" of Trendelenberg, the blood ran down the internal saphenous from the abdominal veins; thus during the strain of coughing, defæcation, &c., the blood passed down when valves were defective, and the cough impulse passed down the leg. There was also an inferior or muscular reflux, which could be likened to the mode of action of a Higginson's syringe. In the normal person the powerful contraction of the calf muscles had no effect on the superficial veins, but in the varicose type the blood, during such muscular contraction, was pushed backwards and forwards, and that was where the stasis occurred, not because of gravity but because of muscular action. For that reason he preferred the old term "varicose ulcer."

Mr. **D. H. Patey** said that this re-discovery of the principle of elastic compression in the treatment of varicose ulcer enabled one to heal ulcers which hitherto failed to respond to other forms of treatment. At the varicose clinic of Middlesex Hospital he had tried the Dickson Wright method, short of grafting, and he had been endeavouring to find a more economical method of bandaging, for that would make a great difference to the total hospital expenses. The patent bandages cost 2*s.* to 2*s.* 6*d.* each, and each could be used only once. It was found at his clinic that equally good results could be obtained by painting the whole leg, including the ulcerated area, with Unna's paste, and firmly applying, from the instep to below the knee, a crepe bandage. An advantage of this method was that the perspiration was not retained, as it was under the rubber solution of the patent bandage; the sweat could percolate through, and hence there was not the same tendency to dermatitis, and the bandage could be removed at the end of a week, washed, and used again and again. The patent bandage, applied once a week, cost the hospital 1*s.* 6*d.*, the alternative he had mentioned cost 1*d.* per treatment. He had treated only 20 cases, and the ulcers were not so big as those described by Mr. Wright.

Dr. **H. G. Adamson** pointed out that a somewhat similar principle of treating ulcers of the leg had been periodically advocated for many years, only to be forgotten and then re-discovered. The essential in all those treatments was to overcome the effects of gravity by applying a pressure bandage. Mr. Dickson Wright happened to use a new sort of bandage, but similar results could be obtained with other bandages. Richard Wiseman as long ago as 1676 advocated treating these ulcers by squeezing out the œdema by firm bandaging of the leg from ankle to knee; afterwards applying a laced stocking.

Mr. **J. E. H. Roberts** said that the fact that a somewhat similar treatment had been carried out by other people did not detract from the credit due to Mr. Dickson Wright. He spoke of a case in which an ulcer of 20 years' standing was successfully treated by the application of meat extract.

Mr. **R. H. S. Wright** spoke of the risk that this method, because of its simplicity, would be handed on to people who might use it inefficiently.

Mr. **Dickson Wright**, in the course of his reply, laid stress on giving cured patients instructions on how to prevent recurrences. Shoes should be discarded, and boots substituted, to reduce the possibility of malleolal ulcer. Also, on any sign of recurrence, patients should at once return to hospital. The possibility of recurrence should never be held to justify leaving a condition untreated. It must be insisted on that the legs of these patients would not remain safe without support. The ordinary type of elastic stocking was not sufficient for a case which had been a severe "white-leg." The term "varicose ulcer" was not applicable to all these cases; it gave the impression that if the varicose veins were put right the leg would be safe, which did not follow. In reply to Mr. Patey, he said that the bandage was not put on once a week, but every three weeks. His cures of these ulcers at St. Mary's Hospital were 100 per cent.

REVIEWS AND NOTICES OF BOOKS

History of Pediatrics.

By George Frederic Still, M.D., LL.D. London: Humphrey Milford, Oxford University Press. 1931. Pp. 526. 25s.

The progress of the study of diseases of children through 2300 years is set out here for our consideration by Dr. Still in a combination of chronological and biographical notes, very interesting in matter though the system on which the selection of personalities has been made is not always easy to follow. No reader will complain of the author's capriciousness, however, for what is supplied for consumption is excellent, while the presence of one writer or savant of old and the absence of another is dictated not by comparative eminences but by whether one did and the other did not contribute to pædiatrics.

It is not surprising that the study of sick children should have as long a history as that of medicine, for the needs of such patients must always have been a first care for parents, especially for the mother, who would never, throughout the ages, have spared herself any trouble to provide or obtain assistance for her offspring. It was to be expected, therefore, that Dr. Still would begin his record with Hippocrates and Aristotle, and to be expected also that the record would have its scientific beginnings, founded on real observation, obscured almost from the first by the imaginations of those who followed. It was certain, also, that there would be the inevitable and dreary gap between the classical and mediæval periods during which no addition to the knowledge of pædiatrics can be traced; though the subjects for investigation and treatment were no doubt anxiously watched through the Dark Ages, mystical rites had to replace therapeutics in this as in other branches of medical science. It was not until the invention of printing in the middle of the fifteenth century that, with the revival of learning, there began anything like a systematic study of children's diseases. With the seventeenth century scientific medicine began on a sure foundation to make sound and steady progress, and among those who contributed by their writings to the advancement of pædiatrics Dr. Still signals out for mention Daniel Whistler, the first to identify rickets as an entity under the name of the "Morbus puerilis Anglorum"; Glisson, who wrote De Rachitide and identified the knock-knee and the rachitic chest; Thomas Bartholin, who in De Angina described diphtheria correctly, but debates whether a purple thread tied round the small sufferer's neck might not be valuable; Robert Pemmell, who wrote a treatise on children's diseases in 1653 of a very practical nature; Claude Quillet, the author of the Callipœdia, a Virgilian poem on eugenics which gained translation by a Poet Laureate; that interesting "Gent student in physick and astrology" Nicholas Culpepper; and persons of household fame, like Thomas Willis, William Petty, Locke, Sylvius and Sydenham.

The seventeenth century had seen a veritable rebirth of medicine, many of whose leaders advanced the study of pædiatrics; but the eighteenth, while it provides many less well-known names in this connexion, can boast Nicholas Andry, who invented the word "orthopædics"; George Armstrong, the founder of the first dispensary for children in this country; William Heberden, who distinguished chicken-pox from small-pox; Hugh Smith, whose "bubby-pot" reintroduced the "baby's bottle"; John Hunter and Edward Jenner. Concerning all these, and many others, Dr. Still provides lively and learned biographical notes, illustrating in this way the progress of pædiatrics down to the opening of the nineteenth century.

The work is that of a scholar who has enjoyed writing it, and many readers will enjoy the result.

Recent Advances in Hæmatology.

Third edition. By A. Piney, M.D., M.R.C.P., Hæmatologist to the London Cancer Hospital. London: J. and A. Churchill. 1931. Pp. 348. 12s. 6d.

Most of the matter contained in this volume hardly comes under the head of "recent advances"; but had the author confined himself strictly within the limits of his title he would have had little to talk about beyond the liver treatment of pernicious anæmia. The book is of more value than would be a mere compendium of recent work; it sets forth clearly the present state of knowledge in regard to the so-called "diseases of the blood." In this as in previous editions the author shows himself a safe and judicious guide, albeit one whose footsteps are rather tortuous and difficult to follow. However, his conclusions, to quote his own clumsy phrase, are "almost invariably practically" sound. The chapter on the hæmorrhagic diatheses is valuable in giving a full résumé of the subject without any attempt at minimising the difficulties of classifying the various states. Dr. Piney has done good service in pointing out that on theoretical grounds it is possible, though very unlikely, for hæmophilia to appear in a female; this is a possibility which is usually too lightly dismissed. The section on the Schilling "hæmogram" is good, and should serve to induce English hæmatologists to explore the possibilities of this very simple procedure.

Radium Therapy: Principles and Practice.

By G. E. Birkett, *M.C.*, M.R.C.S., Hon. Radiologist, Manchester and District Radium Institute. London: Cassell and Co., Ltd. 1931. Pp. 186. 17s. 6d.

Dr. G. E. Birkett, whose early and lamented death we noticed on Feb. 14th, was already well known as an authority on the radium treatment of cancer by his writings on the subject in the *British Journal of Surgery* and *The Lancet*. He had recently gathered together the results of his experience into a modest volume, which presents concisely and attractively the position that has been reached in this branch of therapeutics. Dr. Birkett pointed out in his preface that the key to the situation is the radio-sensitivity of the growth rather than the provision of further surgical access, the variations in the sensitivity being the most disconcerting aspect of the problems which face radium workers. He was no facile optimist, and did not hesitate to indicate the failures of radiotherapy, as is illustrated by the unsatisfactory results obtained in treating carcinoma of the rectum, a well-differentiated type of growth, and therefore likely to be radio-resistant. Clearly Dr. Birkett had found the most useful field for his activities in treating carcinoma of the tongue and buccal cavity, and in that part of his book dealing with these tumours he was able to give the most first-hand evidence of results. His pronouncement on the value of radium in treating carcinoma of the breast is on the cautious side; the implantation of needles in the axilla only through a wide incision is advocated. In the treatment of rodent ulcer the author had much experience, the value of radium treatment for this lesion having been long established. Dr. Birkett discussed the relative merits of β and γ rays in treating rodent ulcer, and concluded that γ rays acting over a relatively long period probably give the best results. With the regions of the body where the value of radium is still most in doubt, Dr. Birkett dealt only briefly, his concern being with practice rather than theory. The treatment of carcinoma of the œsophagus is not even mentioned, and it may be inferred that radium is here still found to be very unsatisfactory. It would, perhaps, have been better to indicate this in a short discussion, rather than to create uncertainty by silence. The illustrations throughout the book are of excellent quality, though some additional diagrams might have helped towards the understanding of the rather difficult technique used in some parts of the body. It will still be necessary for the serious student of radio-therapeutics to refer to original sources of information, Dr. Birkett's survey being too rapid for the conveyance of detailed instructions.

The Animal Mind.

By C. LLOYD MORGAN, F.R.S. London: Edward Arnold and Co. 1930. Pp. 275. 12*s.* 6*d.*

Prof. Lloyd Morgan was born on Feb. 6th, 1852. Towards the end of the nineteenth century he published three books which may without much exaggeration be called classics—"Animal Life and Intelligence," "Habit and Instinct," and "Animal Behaviour." They are all out of print, and everyone with psychological attachments will welcome this survey of a veteran's life interest, put forward after 30 years' further reflection. Mental relations, he says, do in some way count in the affairs of animal life; comparative psychology is a real subject of study. The trouble is that the minds of animals which we cannot observe are hidden behind a screen of behaviour which is obvious to us. Believing as he does in the importance of emergence in evolutionary processes, the theory, that is, that novelties may appear which have no apparent relation to the bases from which they came, he holds that it is unsound to account for processes which are infantile, ontogenetically or phylogenetically, in terms of mature processes such as the reflective stage of mind which man has reached. The animal mind, therefore, must be studied as such and stated in terms of itself. Of all this and a good deal besides Prof. Morgan gossips with the "gentle reader" to whom the book is dedicated. But let no one hope that he avoids taking his companion into hard places.

Handbook of Physiology.

Nineteenth edition. By W. D. HALLIBURTON, M.D., LL.D., F.R.C.P., F.R.S., Emeritus Professor of Physiology; and R. J. S. MCDOWALL, M.B., D.Sc., F.R.C.P. Edin., Professor of Physiology, University of London, King's College. London: John Murray. 1930. Pp. 842. 18*s.*

IT is now over 80 years since the text-book which the present generation knows as "Halliburton's Physiology" was first published. The eighteenth edition saw a rearrangement of the subject matter, and the removal of material that was no longer called for in a book of this nature. In this nineteenth edition this has been further extended so as to collect all cognate subjects together, with an economy in space. The book bears evidence of having been recently brought up to date. The authors write fluently and pleasantly and the reader is brought by simple steps to an appreciation of the subject. Occasionally some laxity is noticeable, and this is seen particularly in the section on the respiratory quotient. This subject is always a stumbling-block with students, and a statement (p. 262) that the quotient is the ratio between the CO_2 expired and the oxygen "inspired" is likely to add to the difficulties of the teacher. The error is accentuated in the fourth paragraph on the same page. In discussing the possible channel of the excretion of the pituitary autacoids, the suggestion is quoted that this may be via the cerebro-spinal fluid, in view of the oxytocic property of the latter. Van Dyke and others have shown, however, that the phenomenon is due to the variation between the calcium content of the cerebro-spinal fluid and that of the fluid in which the uterine slip is immersed. The subjects of diet and food values are very fully treated; and a chapter on conditioned reflexes gives an admirable summary of some of Pavlov's work. The book is well printed on good paper, and the more important points are emphasised by heavy type. The continued popularity of this work should be assured.

Die Schwangerschaftsdiagnose aus dem Harne.

By Dr. S. ASCHHEIM, Director of the Berlin Gynæcological Clinic. Berlin: S. Karger. 1930. Pp. 62. M.4.80.

THE first chapter of this small book contains an account of the researches which led up to the discovery of the pregnancy diagnosis tests, together with a description of the changes which occur in the ovary of the animal during the course of the test. The second and third chapters are those most likely to be of interest to the practising physician or surgeon; they are concerned with technique, and include a summary of results actually obtained on more than 1300 patients submitted to the test. This latter portion of the work is subdivided into sections which deal with results in (*a*) non-pregnant individuals, (*b*) normal pregnancy, (*c*) the puerperium and cases of fœtal death, (*d*) extra-uterine pregnancy, (*e*) vesicular mole, and chorionepithelioma. Short chapters follow which are devoted to the experiences of other workers in carrying out the test, to the results obtained with the urine of pregnant animals, and to the errors to which the test is liable. The book closes with a discussion of the views held by Dr. Aschheim on the source and nature of the hormones present in the urine of the pregnant female. The chapters devoted to technique give all the information necessary to enable anyone who has never seen the test performed to carry it out without difficulty. One point, however, is not mentioned—that many urines prove to be so toxic that some or all the mice die before the completion of the test. In such cases other extraction will render the urine non-toxic (Zondek, B.: *Klin. Woch.*, May 24th, 1930).

The usefulness of the book is increased by the inclusion of some photomicrographs and two coloured drawings showing the condition of the ovary at the conclusion of a positive and of a negative test.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 28, 1931.

HOSPITAL READJUSTMENT IN LONDON.

Last April the London County Council took over responsibility for 76 hospitals and institutions, with a total of some 42,000 beds, transferred to it by the Local Government Act of 1929, and a report presented on Tuesday to the council by its central public health committee gives an account of its stewardship for the transitional period of nine months. The magnitude of the task might well have daunted the most versatile administrator. The total number of beds is threefold that of all the voluntary hospitals, large and small, within the county of London, and 20 of the hospitals are not even situated within the area. The variety of practice inherited from the late managers could not within a few months be reconciled into a common practice for the future, and it was inevitable that existing arrangements should be permitted to continue for a period. The first principle in fact has been to allow no break in the continuity of the transferred services, although it has been possible to substitute for the individual direction of 26 separate authorities a central direction under the county medical officer of health. Central supervision of accounting and stores has also been secured and the council's chief engineer and architect supervise all the buildings. Speaking generally, central control is exercised through seven subcommittees meeting at the County Hall, but each hospital or institution has its own subcommittee which is required to meet at least once a month at the hospital, and to make a visit of inspection at least twice in the month. There are now 72 of these hospital committees with a membership of 382 of whom 360 are coöpted; for it has been possible in the majority of cases to secure the services of former members of the late authorities.

The hospitals, 33 in number, transferred from the late Metropolitan Asylums Board, had long been under central control, and the existing régime has generally been continued. In a few directions progress has no doubt been accelerated. The additional accommodation which has long been needed for post-encephalitic cases has now been allotted at the Northern Hospital, Winchmore Hill, where 240 beds instead of the previous 120 will soon be available for this disease. Hospital accommodation is to be provided for cases of congenital syphilis in children at St. Margaret's Hospital, whose marasmus cases will then be transferred to Queen Mary's Hospital at Carshalton. There has been one act of limitation, for at South Wharf, Rotherhithe, suspected cases of small-pox will no longer be received, and after April 1st next a medical certificate will be required that every patient admitted is actually suffering from the disease. The situation was quite otherwise in the general hospitals. In 28 of these, provision for the acute sick was, rather surprisingly, found to be fully utilised, at times indeed subject to great pressure, enhanced by the fact that little convalescent accommodation was available. Happily this situation has been eased by the provision of two convalescent hospitals with a total of 800 beds—viz., Queen Mary's Hospital, Sidcup, opened last July, and St. Benedict's Hospital, Tooting, opened this January. Under the category of chronic sick, many cases under the old régime were mixed with non-sick persons, often under unsuitable conditions. Agreement has been reached in defining this group and all those requiring continuous medical and nursing attention will remain under the care of the health authority in the 12 institutions allocated for use as hospitals. It will take some years to separate the sick from the sound in order not to entail hardship by transferring those who have relatives or friends in the locality, but new cases will be placed in accordance with the new principle. Acute sick and chronic sick are not to be kept apart as was at first sight thought desirable, for this would involve taking patients too far from their homes, and it was felt impossible to secure a high standard of medical and nursing care in institutions containing only patients of the chronic type. A proportion of three acute to one chronic sick is now being aimed at.

Some minor but still very important arrangements have been standardised throughout the hospitals. There is now a standard style and pattern of nurses' uniform, the badge being inscribed with the name of the hospital. A standard pattern of crockery has been introduced, and a beginning of improvement in the dietary scale. Extras were more liberal at Christmas time, and allowances are provided for the purchase of newspapers and periodicals. One practice, however, has been destandardised, for there are to be no more combined funerals. Many of the hospitals have been renamed either after saints or the district in which they are situated. Arrangements have been continued with six of the borough councils for accommodating maternity patients selected under their welfare schemes. The thorny question of early awakening of patients is being handled discreetly. The rule now holds that except in special circumstances no patient should be awakened before 6 A.M.; under the old régime quite a number were roused before 5 A.M., even in winter. Consultation with the voluntary hospitals has been ensured by the constitution of a committee of representatives of the voluntary hospitals, 40 in number, whose assistance is invoked by correspondence or informal discussion. The proposals for uniform scales of salary and conditions of service for medical and lay staff have been submitted to this committee. There has been exchange of views on the possibility of using obstetric cases in the municipal hospitals for the teaching of students. Existing units, however, are not of sufficient size to be suitable for teaching purposes and are now fully used for the training of nurses, but effort will be made to meet the point. Municipal hospitals contain types of chronic disease less often seen in voluntary hospitals, and these are to be made accessible for teaching purposes. Altogether the period has been one of modest achievement with preparation of the ground for big and beneficent changes to come.

AN EARLY SIGN OF EPILEPSY.

IT will be generally admitted that the diagnosis of epilepsy is often made long after minor manifestations of the disease have been in evidence. In the presence of that undeniable and dramatic event, a major epileptic fit, the meaning of a whole series of minor events, extending often over a period of years, becomes at once clear. There may have been psychological manifestations, such as periodic irritability or difficulties of temperament, the interpretation of which as epileptic, in default of other indications, could hardly have been expected. There may have been local muscular spasms or myoclonus which have been labelled by relatives, school teachers, or doctors as habit spasms, grimacing, or just clumsiness. Or there may have been those typical momentary attacks of petit mal without muscular spasm which are so well described by the French as "absences." If these absences are frequent they are sure to be noticed by teachers and others who have to do with the child, who is then said to be suffering from periodic lack of response, from inattention, or from mind-wandering. When, as so often happens, the child is also backward and slow in thought, word, or deed, the absences are apt to be looked upon as a part of the general mental retardation, and their significance is thus overlooked. A history of myoclonus or of "absences" should at once lead any medical man to consider the diagnosis of epilepsy.

Dr. GILBERT ROBIN, as our Paris correspondent lately told us,[1] has called the attention of the Academy of Medicine to another sign which may very early give the clue to a similar diagnosis, and which he believes has never been described before. This is a form of mental inhibition which sometimes follows a question put to the child. The question is followed by immediate silence. The child's look is vague and wandering, or his eyes may be fixed. There is no trace of emotion. All his mental processes seem to be arrested, and his mind is a blank. He does not speak, not because he cannot find the words, but because he has nothing to say. Sometimes, after the inhibition has passed, the answer to the question comes; sometimes the question has been forgotten. But even during the inhibitory phase consciousness and common physical sensibility are not lost. Children subject to inhibition of this type are usually very slow mentally, and typically backward in school attainment; they tend to show such common characteristics of the epileptic temperament as bad temper, impulsiveness, turbulence, nightmares, somnambulism, and persistent enuresis. Finally Dr. ROBIN claims that therapy furnishes proof of the existence and nature of this peculiar form of inhibition; administration of phenylethylmalonylurea gives results which are satisfactory and certain. He finds, curiously enough, that the best results of all follow the combination of this therapy with antisyphilitic remedies, even where there is no clear evidence of a syphilitic ætiology. In considering this syndrome it must be remarked that lack of response to a question is common enough. True aphasia, intentional silence, and abnormal response associated with an incipient psychosis may be easily excluded. Dr. ROBIN claims that emotional inhibition, the most common cause of lack of response, can be readily differentiated from the form he describes. In emotional inhibition it is not thought that is interefered with so much as the means of expression; the child is obviously confused, he may stammer, or say something which is meaningless. Careful observation will show tremor and vasomotor or secretory disturbance. Moreover, this emotional type of response will not be called into play by a question from one of his family or playmates, while in the type of inhibition which Dr. ROBIN seeks to establish the position of the questioner is immaterial.

Differentiation from mere mental slowness on the one hand and from the true epileptic absence on the other is more difficult. Dr. ROBIN holds that it is distinct from both, but in some sense forms a connecting link between the two. True epileptic absence should, we think, not lead to any confusion. The beginning and the end of the absence are usually sharp and easily observed; while the attack lasts there is no response to sensory impression, and subsequently amnesia is complete. The diagnosis from mental slowness, however, is a different matter. The minds of many epileptics, especially those who have frequent major fits and in whom the disease has persisted for a long time, work extraordinarily slowly. In such cases the patient's face may lead one to think that he has not heard the question and certainly has not grasped its meaning, but ultimate response is certain and correct, though the interval may be almost absurdly prolonged. It is not clear to us how Dr. ROBIN would distinguish this mental slowness from the type of inhibition he describes. Another form of delayed response, more often seen, no doubt, in class than in individual work, is that of the poseur, who consciously or unconsciously likes to prolong the time during which the attention of the questioner or other members of the class are fixed upon him. Clinically this is different from emotional inhibition, and is in our experience not very uncommon among epileptics. It is a type of response whose evaluation must depend on an intimate knowledge of the child. We commend Dr. ROBIN's observations to those who have to deal with abnormal children. No one can doubt that the earlier we can with any certainty assign a train of symptoms to the epileptic group the better. The mode of response to questions is one of the easiest things to observe, and it may be that in some cases it will supply a valuable clue.

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[1] THE LANCET, Jan. 24th, p. 213.

A REGISTER OF OSTEOPATHS.

A BILL is now before Parliament which, it is stated, seeks to give osteopaths the right to practise medicine on the same terms as "orthodox" doctors. This proposal evidently commands some support and therefore requires consideration.

The term "osteopath" is nowadays applied loosely to anyone who undertakes the adjustment of misplaced or displaced bones. Thus it covers a whole range of practitioners from the village bonesetter to the graduate of an American osteopathic college, and in considering their claims one must distinguish between these two extremes. The bonesetter ordinarily confines himself to the treatment of recognisable injuries, deformities, and dislocations. He may cultivate his reputation as a miracle-worker, but it is a personal reputation based on personal skill in manipulation. Regular osteopathy, on the other hand, regards itself as a complete philosophy of medicine. ANDREW STILL its founder maintained that the primary cause of every disease is an interference with blood-supply or nerve function, and that this interference is always due to dislocation of one of the small bones which make up the spinal column. He further held that "all the remedies necessary to health are compounded within the human body. They can be administered by adjusting the body in such manner that the remedies may naturally associate themselves together." In STILL's opinion man should study and use only the drugs that are found in his own drug-store—that is, in his own body. His followers, however, have gradually forsaken these tenets and willingly make use of chloroform, morphia, alcohol, electrical treatment, and even surgery. The history of osteopathy shows in fact, a gradual departure from the simple ideas with which it started. Its colleges in America have become more and more like the schools of orthodox medicine; the course of training has become longer and longer so as to include preliminary sciences, and the larger centres now offer courses much resembling the medical curriculum. In consequence, other and simpler doctrines are preached in rivalry and osteopaths find themselves in conflict, for instance with the chiropractors, who still maintain (with excellent salesmanship) that almost all human ills are traceable to congestion in the nerves emerging from between the vertebræ. In a world of enthusiastic healers the modern osteopathic graduate looks almost scientific. But his practice is still largely based on the principle that harmonious alignment of the various spinal segments establishes the greatest degree of immunity against disease.

Fanciful pathology of this kind appeals strongly to a large section of the public, and we are now faced with a situation in which many people are further attracted to osteopathy because they think it is persecuted. It is a mistake to give any colour to this idea, while at the same time it is impossible to accept the claims of osteopaths as now put forward. If these practitioners are to enjoy the same rights as those whose names appear on the Medical Register it is essential in the public interest that they should earn these rights. The Register was established in 1858 in order "that persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners." To become qualified it is necessary to undergo prolonged training at a recognised School and pass examinations of a standard approved by the General Medical Council. Having satisfied the examiners, the practitioner is allowed to give certificates of sickness and death, to prescribe certain dangerous drugs, and to recover charges in a court of law. Parliament has decreed that these privileges cannot safely or reasonably be conferred on anyone who has not had the elementary training required for registration; but in other respects the practice of medicine, unlike that of dentistry or midwifery, remains free—so far as public opinion allows—to all who care to attempt it. In this country, therefore, unregistered practitioners enjoy an unusual liberty, and the more estimable osteopaths are seeking to be distinguished by privileges and registration because they dislike being confused with weaker brethren by whom this liberty is often grossly abused. But the intervention of Parliament is not required for a cleansing movement in their body, and there is nothing to prevent their establishing a private register, like that of the masseurs, which will soon gain all the prestige it deserves. If osteopaths were to make effective rules against improper advertisement and improper practice and raise their qualifying standards we should be more inclined to think of them in terms of coöperation.

In all this controversy the outstanding fact, too often forgotten, is that no legal obligation is placed on qualified practitioners to conform to accepted principles of treatment. The General Medical Council is instructed to give its hall-mark to all who have heard and understood the current teaching and have proved themselves capable of recognising common disorders. From the point of view of the public safety, the function of the General Medical Council is to ensure not orthodoxy of treatment but chiefly competence in diagnosis. Where osteopaths have followed the regular medical courses and have passed the regular examinations they will automatically share in the privileges of registration. But the State will stultify its own precautions if it allows any short cut to these privileges.

INTERNATIONAL TRACHOMA PRIZE.—The Royal Hungarian Minister of Public Welfare and Labour offers a prize of 2000 Swiss francs for independent work (published or unpublished) on the ætiology of trachoma. Essays intended for the competition must be addressed to the Eye Clinic No. 1 of the Royal Hungarican Peter Pázmány University, Budapest (VIII, Mária-utca 39) not later than June 30th. The jury of award may also consider works not submitted for competition but appearing in print between July 1st, 1929, and June 30th, 1931. The essays submitted may be written in German, English, French, Italian or Hungarian. The jury of award consists of Mr. A. F. MacCallan (London), Dr. Victor Morax (Paris), Prof. L. Maggioro (Bari, Italy), Prof. Carl Prausnitz (Breslau).

ANNOTATIONS

WELSH NATIONAL SCHOOL OF MEDICINE.

THE long drawn out contest at Cardiff over the governance, within the University of Wales, of the Welsh National School of Medicine is nearing its end. The result is now known: the battle is drawn; and perhaps no one is satisfied. In future a medical student entering the University may go to any one of the four constituent colleges at Bangor, Aberystwyth, Swansea, or Cardiff for the first year of scientific study. In fact nearly all, as in the past, will join at Cardiff. The second and third years for anatomy and physiology are to be supervised by a neutral body formed by representatives partly from the University College of South Wales and Monmouthshire (Cardiff), partly from the newly constituted Medical School. Thus these two important departments are not to be wholly within the College or the School. The professors will belong to the Senate of both bodies; academically they will belong rather to the College than the School; financially they will have to rely on the coffers of the School. Such a scheme hardly offers prospects of future harmony, but was adopted as a compromise acceptable to conflicting interests. The Medical School proper takes charge of the fourth, fifth, and sixth, that is the clinical, years of study which are organised at Cardiff where the unit method of teaching was instituted ten years ago. Since, however, the University accepts clinical instruction given elsewhere, in accordance with which concession many students still go to London hospitals for the clinical part of their education, there will be no actual need for a medical graduate of the University of Wales to have ever been a student of this national school of medicine. The School is to be a corporate body within the University, but not on the same footing as the other four constituent colleges; it is something less than a college, something greater than a Faculty. A redeeming feature in this curious position is that the new school is to be financed, in part at least, by a separate rate contributed by all the public educational authorities of the Principality. Provision is made for a break-up of the contemplated organisation in the clause assuring the reversion of the Welsh National Medical School to Cardiff in the event of the establishment of a separate University in that city. The Charters giving substance to these arrangements become operative on July 1st next. Their provisions are far different from what was contemplated by the Royal Commission which reported on the subject some 15 years ago.

DENERVATION OF THE URETER.

IN the absence of any gross lesion it may be very difficult to treat patients suffering from renal pain. Such cases, moreover, are by no means rare. They are found usually amongst women, and when surgery fails in relief they are apt to be labelled neurotic. Sometimes pyelography shows slight dilatation of the pelvis and calices and redundancy of the ureter, and an exploratory operation is undertaken. More often than not no adhesions are found round the uretero-pelvic junction, and no mechanical explanation of the early hydronephrosis is forthcoming. These cases have been treated often with success by Marion by performing a high nephropexy. Sometimes, however, this operation is entirely unsuccessful. T. N. Hepburn[1] now publishes a description of a new method of tackling these cases, which may be described as denervation and displacement of the ureter. The ureter is exposed extraperitoneally through an incision which runs from the costal margin to the pubic bone along the outer edge of the rectus. The ureter is lifted from its bed behind the peritoneum and displaced laterally until all its slack is taken up. It is then secured in its new position by means of three or four fine sutures which fix it to the nearest muscle structures. Unfortunately Hepburn is only able to describe one case in which he has performed this operation with success, so that it would be unwise to draw conclusions. The operation of denervation of the kidney has been employed for some years by Papin of Paris for cases of unexplained renal pain. Hepburn considers that since pain is often the result of ureteric spasm rather than spasm of the pelvis denervation of the ureter is sometimes more suitable than division of the sympathetic nerve supply to the kidney. Whether his reasoning is correct and whether denervation and displacement of the ureter will be found on further trial to be useful for these difficult cases remains to be seen, but undoubtedly his paper should stimulate interest in a difficult problem.

MUNICIPAL (LATE POOR-LAW) CHILDREN.

How to deal with the children who were lately under the poor-law is a problem of some complexity. These children have no homes and have usually spent their infancy in conditions that have made them either unstable and undisciplined or miserable and repressed. Their parents have seldom given them any training in habits and conduct, with the result that obedience, good behaviour, self-confidence, and aptitudes—sometimes even speech—as well as personal cleanliness have failed to develop. These infants and runabouts need therefore far more care and training than any ordinary child and, unless ideal foster mothers are available, the best place for them is something of the nature of a creche with properly trained children's nurses. It is remarkable what improvement in behaviour and habits can be effected, even when the children are mentally defective, by a good nursing staff. On the other hand, to keep children for many years in large institutions or institutional schools is to run a risk of producing "institutionalisation"—an ugly word for an ugly thing. These considerations have been in the minds of the Public Assistance Committee of Middlesex County Council in framing a policy for dealing with the children maintained by them. The general lines of the scheme they suggest are as follows:

(*a*) Children under 5 years of age to be maintained in special homes, staffed as far as may be by trained children's nurses.

(*b*) Children of school age to reside in scattered homes, of not more than 30 beds each.

To the purely administrative type of mind there is something attractive in the efficiency and economy, the strict standard of cleanliness and obedience found in a large institution, and it is quite true that the most acute evils made famous by Dickens—cruelty, bullying, under-feeding, and neglect—no longer exist; but the ghost of Tattycoram is not yet exorcised and, even if cases of deep resentment and brooding are rare, there are enough instances of loss of initiative and joie de vivre to lend truth to the dictum that "a bad home is better than a good institution." Anything that breaks the monotony of perpetual living together is to the good, both for staff and children, and it is therefore well for the children to attend school outside; but it is better still for them to be outside altogether in "scattered homes" and to attend school from them. The number in each home should be kept as low as 12, and the quota should be of various ages; so that the little community may be more like a family. Another system is to have a number of houses under house-mothers and house-fathers within the grounds of the schools, combining centralised education and medical supervision with something approaching home life. Systems of this kind are working well.

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[1] New Eng. Jour. Med., Jan. 1st, p. 1.

The size of the unit is of primary importance. The child from a large institution is often found to have no personality and to be unaware of his own birthday, while in the small unit a birthday is an event. Even in large units much can be done by the new spirit. The head of a large poor-law school recently noticed how the children who received Christmas parcels were envied by their less fortunate fellows and contrived to send each of the neglected ones a parcel of his own. The policy adopted by the Middlesex authorities will provide the training needed by the infants and avoid keeping the older children in large institutions. Provided that there is close medical supervision and the right atmosphere it should be a success.

LEAD TREATMENT OF MALIGNANT DISEASE.

Dr. Arturo Arrigoni,[1] of Milan, reports investigations on the action of lead on 37 cases of cancer under his observation. He used four different preparations: (1) That of Zambeletti, a colloidal suspension of lead carbohydrate and magnesium containing 0·5 per cent. of lead with the addition of 0·25 per cent. phenol. (2) Zimo-saturnolo, a suspension of lead hydrate in gelatin, containing 0·025 g. of lead in 5 c.cm. (3) Ganassini's preparation, a colloidal preparation of metallic lead obtained by electrical means, in concentration of 0·5 per cent. This preparation, which also contains gelatin and thiosulphate of sodium, is the only one in which colloidal lead is present in a metallic state according to the standards laid down by Blair Bell. It has the advantage that after one month only a quarter of the lead has undergone partial transformation into sulphide, and this transformation does not become total even after six months. (4) The fourth preparation used was an organic compound of lead and was not colloidal; each cubic centimetre contained mg. lead, and its toxicity was therefore much greater than that of the other three preparations. Immediate phenomena of intolerance were often noted with preparation 1, and to a less degree with preparation 3. Preparation 2 was abandoned after its use in one case, owing to marked intolerance, while preparation 4 was used in one case only in which tolerance was good. Arrigoni's conclusion is that in the present state of our knowledge, lead therapy for malignant tumours in man is without any practical value, or at any rate does not represent any sensible progress in comparison with other procedures. The remedy may, of course, prove harmful when employed in doses approaching the toxic, but it is relatively less poisonous when introduced parenterally in a metallic colloidal state. Among the four preparations that of Ganassini was the best tolerated. It was seen that lead often had an affinity for malignant tumours, especially those which were highly parenchymatous, and in these it sometimes produced retrogression and necrosis of greater or less intensity. The necrosis was evident either directly or else indirectly by vascular lesions such as thrombosis in the vessels distributed throughout the neoplastic mass. In patients undergoing treatment the kidneys and liver almost always showed turbid swelling, fatty and granular degeneration, and some degree of functional deficiency. In other words, the distance between the active and the toxic dose of the lead preparations tried was too narrow for therapeutic purposes. Their action, moreover, was uncertain and inconstant.

GENIUS AND MENTAL DEFECT.

It is an old tag that genius is akin to madness and the connexion is not difficult to understand, since only the customs and opinions of the time may distinguish between the abnormality for an adult brain which is admirable and that which is regrettable. It is harder to associate the idea of genius with that of mental defect, for here the brain is recognised to be subnormal in its physical development. Mr. E. J. Lidbetter, who has made a close study of the inheritance of defectiveness, has shown[1] that low-grade types preserve their general characteristics from generation to generation; and a committee of the Eugenics Society has thrown out the definite challenge,[2] "We do not know of a single case of a genius or even of a gifted or talented person having been born of two mentally defective parents." Nevertheless, there are cases on record where true mental defect is associated with brilliance in some one department, such as mathematics. Dr. Macdonald Critchley, writing in the current number of the *King's College Hospital Gazette*, describes several instances of the *idiot savant*. He groups them into four classes. The first consists of superlative technical skill or musical talent; he mentions one child of 15 with a mental age of 8½, who knows all there is to know about the Southern Railway. In the second group the condition is simple exaltation of memory. This, he thinks, is the commonest, and minor degrees of it are not unfamiliar in homes for the defective. One patient knew the dates of Easter in every year from A.D. 1000 to A.D. 2000 and the patron saint of every day throughout the year. Another, a microcephalic, could recite the first line of any hymn of which the number was given him. The third group consists of the "calculating idiot." A blind, intractable, and destructive imbecile became able to solve algebraic problems with great rapidity and to give instantaneous answers to the most complicated mathematical questions, although he was quite incapable of grasping even the rudiments of geometry. Lastly, Dr. Critchley places in a class by themselves the patients whose special ability is to name the day of the week on which a given date falls.

Inaccessible as these defective people are, Binet has been able to point out some criteria for the *idiot savant*. In the first place the mental imagery is not usually visual, but either auditory or tactile. Secondly, these people show a remarkable singleness of purpose. They pursue their occupations entirely oblivious of external events which would distract the normal person. The poverty of ideation in an undeveloped mind is still further enhanced when there is some special sense-privation, and leads to a remarkable concentration along the few avenues which remain open. Thirdly, the clever idiot is always intensely interested and proud of his talents. Binet distinguished clearly between pure memory and abstract calculation. Dr. Critchley thinks that the former plays a larger part than is apparent. The performer always prefers his audience to think that his feat is some esoteric process of calculation rather than one of memory. Some of these persons seem to use more than one key system of numbers; the well-known Sabine is known to have used the ordinary decimal system and a second system of which 16 was the key number. By employing mnemonics, cross multiplication, and various simple short cuts they attain their apparently brilliant feats of calculation.

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[1] Arch. d. Ist. biochim. Ital., 1930, ii., 555.

[1] See THE LANCET, 1927, ii., 727.

[2] Eugenic Sterilization, 2nd edition, p. 21.

THE PSYCHOLOGY OF VALUE.

THE study of value has until recently been an entirely philosophical problem, and although its subject matter, that is, the facts which are subject to the logic and psychology of valuation, concerns the life of activity both æsthetic and moral, those who have devoted their time to its study have concerned themselves almost exclusively with its metaphysical implications. It is only during the present century that the subject of value has claimed the attention of such psychologists as Ehrenfeld, Meinong, and Baldwin. The extension of the genetic method of biological science to psychology has given a new impulse and direction to the study of value. Miss Clarke in a small monograph[1] on the subject shows that she is fully cognisant of this new orientation but has not forgotten that valuation largely depends upon the question of validity and therefore that it is related to the theory of knowledge. In a subtle introduction she relates logic to what she calls "psychologismus," and she proceeds to discuss in great detail the affective theories of value. The chapter on the Theory of Value as Interest will be appreciated by those students of psychopathology who are uneasy about the supposed "hedonism" at the basis of Freud's theory of the pleasure principle. The chapter on Objective Theories of Value is a close analysis of the all too little known work of Alexis Meinong. Miss Clarke is also to be congratulated on having made Urban's complex thinking intelligible. This book is essentially designed for students of logic, but students of psychology will not fail to find pabulum in these pages if they have delicate philosophical palates as well as hard scientific heads.

THE LIVING CELL.

AT the meeting of the Royal Microscopical Society on Feb. 18th, Dr. Robert Chambers, professor of biology in the University of New York, gave a remarkable demonstration of his method of micro-dissection and micro-injection in an address on the Nature of the Living Cell. Probably, he said, the most striking peculiarity of living matter, or protoplasm, is the fact that it exists only within the confines of microscopic dimensions. Protoplasm is protoplasm only in the form of living cells, plant or animal; therefore the only direct method of studying its properties is through the compound microscope under magnifications varying from 150 to over 1000 diameter. The micro-dissection and micro-injection technique of Prof. Chambers was evolved in order to make it possible to manipulate the protoplasm within the living cell. The apparatus is a mechanical device for controlling the movements of spun glass micro-needles and pipettes within the field of the microscope. An apparatus of this kind, built in 1920, was first demonstrated before the Royal Microscopical Society about six years ago. Since then several different types of instrument have been developed by various workers. The present apparatus is a model based upon the original one of 1920, but has been modified from year to year by the addition of various improvements, and is so constructed as to permit operations upon the living cell under the highest magnifications. By means of this instrument many new facts have, it is stated, been discovered regarding the physical and chemical properties of protoplasm. It is known, for instance, that the nucleus in many cells is a fluid body and is more alkaline in reaction than the cytoplasm in which it is immersed. The oxidation intensity of living protoplasm has also been determined by the injection into the living cell of dyes which are reducible. For example, when the colour disappears upon injecti and can subsequently be made to reappear by th injection of an oxidising agent, we can be fairly certain that the protoplasm had reduced it in the first instance. Similarly, by this method, the physical properties of the hitherto hypothetically regarded cell-membrane have been made the object of intensive study.

THE TRANSPLANTED COOLIE.

THE introduction of Chinese labourers into equatorial or subtropical Africa has been attended by such disaster in the past that it has come to be received almost as an axiom that they are incapable of acclimatisation. The first attempt was made in the French Sudan in 1882 when 35 Chinese labourers were engaged for work on the railroad; in the following year no record is to be found of any survivors among this group, which is the less surprising since the death-rate among the European supervisors was 22 per cent. At a second attempt at Matadi in the Belgian Congo in 1892, 529 Chinese coolies were engaged, of whom 170 survivors were repatriated two years later, the death-rate having been 68 per cent. in 26 months. The mortality among workers on the Matadi railway was great enough to give rise to the saying: "The railway from Matadi to Leopoldville cost one European for every kilometre and one native for every sleeper." Similar attempts made later in the Congo and Madagascar also met with failure. In a report to the International Office of Public Hygiene, Médecin Général Inspecteur Boyé describes the diet which these exiles received during their employment in Africa, and which consisted largely of polished rice and dried fish. It is not surprising that they found themselves incapable of acclimatisation or that they succumbed readily to beri-beri, malaria, dysentery, or phagedenic ulcers. In the face of this experience it is interesting to learn that an attempt to employ Chinese labour in the French Congo from 1929 to 1930 resulted in a mortality-rate of only 4 per cent. in 15 months. Engagement of every labourer was preceded by a rigorous medical examination, anti-typhoid and anti-cholera immunisation, vaccination, and the elimination of intestinal parasites. The boats used for transport were well equipped and hygienic, and the coolies were supplied with incompletely decorticated rice in order to prevent an outbreak of beri-beri on board. Three deaths among 782 passengers occurred during the voyage, one being that of a stowaway woman suffering from tuberculosis, and another resulting from a quarrel. Camps had been prepared for their reception on landing, from which the great majority were sent on to Mayumbe; this transference was not made without misgivings, for the death-rate there was considerably raised among both the Europeans and the native labourers.

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[1] A Study of the Psychology of Value. By Mary Evelyn Clarke, Ph.D., Assistant Professor of Philosophy, Smith College, Mass., U.S.A. London: University of London Press. Pp. 330. 7s. 6d.

The experiment, however, was extremely successful from a sanitary point of view. A nine-hour day with a diet calculated on a minimum of 3000 calories was arranged; rations included rice, bread, fresh or salt meat, salt, dried, or fresh fish, green or dried vegetables, salt, tea, and fat. Dried vegetables were only issued when it was quite impossible to obtain fresh food, a shortage which was rarely allowed to arise; polished rice was given as seldom as could be arranged. A proprietary product under the name of "pâte azotée" was used to increase the nitrogen content of the diet where this appeared to need reinforcement. Sanitation was carefully supervised in the camps, work was graduated at the outset, and rest enforced. A sufficient supply of warm clothing, for the evening chill, and large sun hats were provided. The development of phagedenic ulcers from the infection of small abrasions by micro-organisms from the soil was avoided as far as possible by the use of shoes and puttees. During 15 months there were 30 deaths, of which 10 were due to beri-beri and 8 to malaria, two of these with blackwater fever; 8 died from causes other than those of endemic origin, 2 from pneumonia, and 3 from dysentery. Unfortunately, in spite of this improved record in acclimatisation, the Chinese coolies proved to be so turbulent that 172 were repatriated as undesirables in December, 1930. The experiment has shown, however, that it is by no means impossible for Asiatic labour to be employed successfully in Africa.

IRON IN ANÆMIA.

THE position of iron in the treatment of anæmia has become far from secure. There are those who would attribute its reputation entirely to its value in chlorosis—now for some reason very rare—and would deny it usefulness in anæmia of other types. On the other hand, a recent discussion[1] at the Royal Society of Medicine showed that it still has many advocates. The failure of iron to hold its own may be due partly to the difficulty of assessing its effect, or partly, perhaps, to inefficient dosage. The establishment of the reticulocyte response as an indication of increased blood regeneration affords a ready means of recognising the efficacy or otherwise of therapeutic agents designed to bring about increased blood formation, and S. C. Dyke in our columns[2] has given reasons for believing that in the anæmia due to chronic blood loss iron in suitable dosage is of definite value, especially if combined with liver. More recently S. R. Mettier and G. R. Minot[3] have studied the influence of iron in certain cases of secondary anæmia of chronic type and obscure causation. They started with the assumption that the reaction of the gastro-duodenal contents might have some effect upon assimilation of iron and they tested its effect when given in moderate doses and in acid and alkaline media respectively. They found that in ordinary therapeutic doses iron produced a reticulocyte response whether given in acid or alkaline medium, but that on the whole the response was better when it was given with acid. They further found that on increasing the dose of iron considerably beyond that usually given—they gave, for example, ferri et ammon. cit. grs. 90 daily—a further and even more powerful reticulocyte response was obtained. They think that anæmia may result from chronic failure in the adjustment of the contents of the gastro-duodenal tract to a pH suitable for the assimilation of iron. In the therapeutic administration of iron, however, they do not believe that the reaction of the medium in which it is administered is of great importance; what really matters is efficient dosage, and their results show that the quantities usually prescribed are far too small. In this connexion it may be recalled that it was the custom of the late Sir William Osler to prescribe iron in the form of the crude "mass" of the carbonate, of which his patients were encouraged to take as much as they could.

DUTCH MEDICAL BOOKS.

THE library of the Dutch Society for the Advancement of Medicine, which is preserved in the University Library at Amsterdam, was founded in 1849. In 1851 the librarian had only 15 books. He then proposed that each of the 900 members should present the library every year with one book. The next year he had 800 volumes and an increasing number in successive years to 1860 when rigorous rules were laid down that the librarians were to collect: (1) works of Netherland authors about medicine and allied sciences; (2) medical works of foreign authors, printed in the Netherlands or in the Dutch colonies; (3) all the writings of interest from a medical point of view, concerning the Netherlands and their colonies. These rules still hold good. Ten years later the library contained about 4000 books. In 1923 the catalogue had 17 supplements which rendered reference difficult, and in 1926 the librarian was requested to compile a new catalogue, which is now complete in a volume[1] of 659 pages, 12 by 9 in. The library at present contains 20,000 books, ancient and modern, and the classification follows medical science in all its branches and is also arranged chronologically. Netherlands medical incunabula are rare but some well known authors are represented, especially the works of Boerhaave. Such names as Albertus Magnus, Adelardi Bathoniensis, Petrus Camper, Swammerdam, Ruysch, van Leeuwenhoek, and Donders find a prominent place in the collection. The names of the librarians should also be mentioned, from Dr. J. P. Heye, the enthusiastic originator, his successors Dr. J. W. Tilanus, Dr. A. H. Israels, and Dr. C. Daniels, to Dr. B. W. Th. Nuyens, the present librarian, who is ably assisted by Dr. C. Delprat, curator, and Prof. Dr. J. S. Theissen, librarian of the Amsterdam University Library.

EXCRETION UROGRAPHY WITH ABRODIL.

ONE of the latest papers on excretion urography is by H. Bronner and J. Schueller[2] of Cologne, who report on the use of Abrodil both for intravenous injection and retrograde pyelography. Abrodil is the sodium salt of iodo-methane-sulphonic acid. Even after injection of large doses no inorganic iodine is found in the urine of rats, cats, and dogs, and this shows that it is excreted by the kidneys without the splitting off of iodine. It is also strongly diuretic. Although a dose of 40 g. is usually recommended, Bronner and Schueller got satisfactory results with 20 g. The diuresis is mainly in the first half hour, and the best pictures are therefore obtained during that period, the ideal time being usually 15 to 20 minutes after injection. It has been suggested that the quantitative excretion of abrodil furnishes a test of the functional activity of the kidneys, but the authors of this paper say that the determinations take so long, and the results are so comparable with those of the usual tests that its use for this purpose is not worth while. Finally they have tested abrodil as a medium for retrograde pyelography, and recommend for this purpose a 15 to 20 per cent. solution. The fact that abrodil is compatible with oxycyanide of mercury allows of its being used in conjunction with this antiseptic. The danger of sepsis is thereby diminished and the surgeon is relieved of one of the anxieties uppermost in his mind when undertaking retrograde pyelography.

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[1] THE LANCET, Jan. 17th, p. 146.

[2] Ibid., 1929, i., 1192.

[3] Amer. Jour. Med. Sci., January, 1931, p. 25.

[1] Catalogus van de Bibliotheek der Nederlandsche Maatschappij tot Bevordering der Geneeskunst. Amsterdam: Internationaal Antiquariaat (Menno Hertzberger).

[2] Surg., Gyn., and Obst., Feb., 1931, p. 254.

BLOOD TRANSFUSION.

BLOOD transfusion is often wanted at short notice, and as Pauchet has said it ought to be as easy as an injection of camphor in oil. With this in mind L. Moreau[1] describes a simple technique which he has found satisfactory. No special instrument is necessary; the apparatus consists of a glass syringe (10 or 20 c.cm.), two or three ordinary strong needles, a Kocher forceps, a rubber band to constrict the limb of the donor, two tumblers, a saucepan, and three lumps of sugar. The sugar is dissolved in a glass of ordinary water and the solution, together with the two glasses, the syringe and the needles, is put in the saucepan, covered with a lid, and boiled for a few minutes. The contents will be cool enough for use by the time the other preparations are complete. One of the glasses is taken out of the saucepan and filled with the sugar water. The tourniquet is fastened round the arm of the donor, who sits beside the patient's bed with his forearm resting lightly on a cloth on his knee. His vein is punctured and the syringe is filled. A second needle is fitted on the syringe and the blood is injected subcutaneously into the patient's chest wall, an assistant meanwhile controlling hæmorrhage by pressing a swab dipped in the sugar solution on to the donor's arm. The procedure is repeated until enough blood has been transferred. The movements are so swift that the blood does not coagulate, but if the syringe tends to become a little sticky it can be washed out with the sugar solution. If the assistant is unable to stop the flow of blood from the donor during the injections, it can quite well be caught in one of the tumblers and the syringe can be filled from there. If a skilled assistant is available a second syringe can be filled while the first is being emptied, and, if more complicated apparatus can be obtained, a large syringe can be used and paraffined ether can be supplied as an anticoagulant. This is very simply prepared by pouring one part of paraffin oil into four parts of ether. Moreau claims that this method, at any rate as an emergency measure, is adequate to produce the dramatically successful results which may follow transfusion in a patient who really needs it.

This or any other method depends, however, on a suitable donor being available, and it is essential for the practitioner to know where one can be obtained. Every hospital ought to have a list of tested and reliable donors. The investigation of the donor needs time and care and is preferably completed before the emergency arises. In New York, as we have already noted,[2] the need led to the establishment of commercial agencies, which have now been brought under the control of the City Board of Health. Every donor carries a kind of passport bearing his photograph and signature, registration number, description and blood classification, with the results of the Wassermann and Kahn test and records of examinations made at the time of transfusion. The physician employing him is required to enter any condition which might indicate unfitness for the purpose, such as low hæmoglobin content, communicable disease, hyperthyroidism, disease of the heart, kidney, or liver, or evidence of drug addiction or alcoholism. He is to enter the date and place of transfusion and the amount of blood taken. The applicant in the first place has to make a sworn statement as to his health and suitability, and undergo a personal and a blood examination by physicians who swear to his identity.

BRITISH ASSOCIATION IN LONDON.

THE centenary meeting of the British Association for the Advancement of Science will open in London on Wednesday, Sept. 23rd, at 3 P.M., when the Right Hon. J. C. Smuts will be installed as president. The ceremony will take place in the Albert Hall during a private view of the exhibition arranged for the Faraday Centenary. At 9 P.M. the same evening Mr. Smuts will give his presidential address in the Central Hall, Westminster. Sectional meetings will be held from Sept. 24th to 30th in one or other of the halls available in South Kensington, the president of the Physiology Section being Dr. H. H. Dale, of the Psychology Section Dr. C. S. Myers, and of the Zoology Section Prof. E. B. Poulton. The reception room will be in the great hall of the Unversity of London. A full preliminary programme may be expected in April.

THE SIR CHARLES HASTINGS LECTURE.

Dr. Edward Mellanby, F.R.S., professor of pharmacology in the University of Sheffield, will lecture on Diet and Health in the great hall of the British Medical Association, Tavistock-square, on Friday, March 13th, at 8 P.M. This is the fourth of a series of public lectures on general public health topics inaugurated by the Association. The chair will be taken by Lord Moynihan, and after the lecture relevant questions in writing are invited. Admission will be free by ticket obtainable from the Financial Secretary, B.M.A. House, Tavistock-square, London, W.C.

THE University of Cambridge has decided to discontinue the award of diplomas in public health, hygiene, and tropical medicine and hygiene, when the present courses end, and to accept no further candidates for these diplomas. The award of the diploma in medical radiology and electrology will continue as heretofore.

BLOOD TRANSFUSION AT MANCHESTER.—The public health committee of Manchester is asking for men of 20 to 35 years of age, and of sound health, to offer themselves for blood transfusions for patients in municipal hospitals. To each person whose blood is standardised 5s. will be paid. Afterwards half a guinea will be paid to persons answering a call but not giving blood, and for each donation of blood three guineas.

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[1] Monde Méd., Jan. 1st, 1931, p. 34.

[2] THE LANCET, Jan. 17th, p. 144.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

IX.—DEFENCE MECHANISMS: FEAR.

DEFENCE MECHANISMS AND EMOTIONAL DISCOMFORT.

It has been suggested in previous lectures that fear, guilt, and inferiority are the three basic feeling patterns which lie at the root of a great deal of subsequent mental disorder. They are primarily independent of individual experience, although they may be exaggerated or modified to a great extent during the lifetime of the individual. In general they are universal feeling tendencies which form the bedrock of psychopathology, and it is our duty as physicians, parents, or friends to minimise these primary affects both in ourselves and in our patients. However, there are right ways and wrong ways of doing so, and the wrong ways are the more common because they correspond with inborn defensive mechanisms.

Fear, guilt, and inferiority are "intolerable" feelings and quite *unconsciously* we all do our utmost to overcome them. The method, however, which first "comes to mind" is the unconscious one which tries to get rid of them by means of *defence mechanisms*. We may perhaps state the position as follows:—

"I do not want to feel fear, guilt, or inferiority."

"I do want to feel fearless (the hero), guiltless (perfect), and superior (omnipotent)."

How are these results to be obtained? We may anticipate that if there is a short-cut method, this will be found in psychopathology. The methods may therefore be divided into those which are psychologically (*a*) desirable, (*b*) undesirable. Of the first, by far the best method, but at the same time the slowest and most difficult, is *growth* or what we may describe as *normal development*. This involves the difficulties of a real adaptation to life, without false aid or self-deception. There is, however, one very important genuine aid to normal growth, and that is *a sense of humour*. Humour is, as a rule, most lacking where psychopathology is most in evidence. It is not perhaps generally realised to what extent humour is defensive, its purpose often being to take the edge off a reality which is too unkind. This accounts for humour's close association with tragedy. If we can see the funny side of fear, guilt, and inferiority, we can also see them in some degree of perspective and they have largely lost their unconscious power over us. To laugh when we are afraid helps to restore the balance of courage. A feeling of guilt is responsible for a great many funny stories, especially of the sexual kind. Humour is probably the most harmless way in which wishes associated with guilt can achieve some measure of fulfilment. A sense of humour will always blunt the edge of inferiority, giving at least the more tolerable quality of the comic and ridiculous. Whether it be shortness of stature, slipping on a banana skin, or feeling sea-sick, it is always good to see it from the funny side. Growth and a sense of humour, then, are the psychological, normal, and desirable means by which we rid ourselves of the undesirable pathological feelings of fear, guilt, and inferiority.

In psychopathology, however, we have the unconscious mechanisms which seek to achieve the same ends, but without the same success. Because they are largely uncontrollable and only "short cuts," they are but disguises for a basic state which still remains, consciously avoided but fundamentally unchanged. Most important of these unconscious defence mechanisms, the purpose of which is to escape from feelings of fear, guilt, and inferiority, may be divided into three: (*a*) over-compensation; (*b*) projection; (*c*) identification.

OVER-COMPENSATION.

The method of escaping from intolerable feelings by over-compensation is an unconscious defence mechanism which has a certain biological value and a limited utility, but which is far from being invariably successful. In general, it may be expressed in mathematical terms as follows:—

"I am"—1: "I feel"—½: "I try to be"—1¾.

It will be noticed that the fraction which is aimed at on the positive side is a larger one than that which measures the degree of deficiency. Further it will be seen that the measure of relative deficiency has, by this method, been actually increased. It is now 1¾ minus ½, that is 1¼. This is important, because the person who is making use of the over-compensation mechanism is always aiming at a standard which is far above that normal which he might be expected under the circumstances to achieve.

When a normal person walks across Westminster Bridge, he probably does not consider the likelihood of his being suddenly called upon to dive into the Thames to rescue a person from drowning. If it enters his mind at all, he is probably content to think that the risks involved are too great and that the best thing that he could do would be to shout to a policeman or a passing vessel, and then leave his personal responsibility in the matter at that. Not so, however, with the neurotic who is over-compensating for a basic feeling of fear. The possibility of heroism is always in his mind, and the thought of Westminster Bridge is closely associated with the thought of someone drowning and his own responsibility in the matter. Nothing would content him but that he must immediately and heroically dive to the rescue. It will be seen how much more difficult everyday experiences are for the neurotic than for the ordinary man, who does not expect to be a hero and does not constantly tease himself with ideas of heroic crises and failures. The neurotic is more afraid than the ordinary man, but because of his over-compensation he expects more of himself and is constantly making himself uncomfortable by wondering what is going to happen and how heroic he will be.

"What would you do if you were walking across Westminster Bridge and you saw someone in the water?" is quite a good test question for evidence of this kind of over-compensation for fear. One patient, who joined the Army Service Corps during the war but even so was soon invalided out with "neurasthenia," was in the habit of hiring a rowing boat on the Thames on a Saturday afternoon, in the hope that he might be able to rescue someone from drowning. He was always in this state of mind of anticipating heroism, because he was wearing mufti when he knew that he ought to have been in khaki. But nevertheless his caution kept him in the quiet and shallow backwaters, where he knew he could never hope to meet the great cowardice-healing adventure of his heroic phantasy.

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* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Earlier lectures of the series have appeared weekly in THE LANCET since Jan. 3rd.

The trouble about over-compensation is that however much the 1¾ standard may be eventually achieved in reality, the basic feeling always tends to remain unaltered, ready to make itself felt at inconvenient moments. Achievement makes so little difference, because the *unconscious is fundamentally unteachable.* A running "Blue" with an international reputation may still remain obsessed with the feeling of his own inferiority and unworthiness, in spite of all his success on the running track.

There was a story told a few years ago of some Austrian peasants, who found work one very hard winter in the streets of Vienna. They had to shovel snow from the road down an open manhole, but when lunchtime came, one of them looked down the manhole and turning to his mate said, "This is no good, we shall never fill up that hole. I cannot see any of the snow we have been shovelling in all the morning." He and his mate then downed tools and decided to return to their own village where, if labour was harder to find, it was less disappointing in its results. This story is typical of what happens when a person tries to fill up the bottomless pit of his fear, guilt, or inferiority by the mechanism of over-compensation. However much snow he shovels into the manhole, it is very doubtful whether in the end it will have made any difference to the bottomless pit.

PROJECTION.

Projection is another unconscious defence mechanism the purpose of which is to achieve escape from intolerable unconscious feelings of fear, guilt, and inferiority. The principle of the method is to substitute the beam in our neighbour's eye for the mote in our own. This is the reason why criticism is usually destructive instead of constructive. By blaming someone else we succeed in lowering his level, and relatively raising our own, which is what we feel we need to do. By finding cowardice or guilt in others, we feel ourselves to be relatively braver or more innocent.

Another common example of this projection mechanism is our usual behaviour on the tennis court, when the ball does not behave as we wish it to do after it leaves our racket. The only reason why we do not blame ourselves for the error is because we do not wish to do so. It is more tolerable to our tender feelings of self-respect that we should blame the sun, the wind, our partner, or our racket—in fact, anything but ourselves.

Projection is the source of much of that kind of charity which does not begin at home. It is so much easier to interest ourselves in the weakness of others than to strengthen our own lives. The unsatisfied sexual urge may be either sublimated or projected into social work of a definitely "moral" kind. If it is a case of sublimation, which is by far the harder of the two, the service will be impersonal, disinterested, broadminded, and tolerant. Projection, on the other hand, although it may lead to greater enthusiasm, will inevitably tend to cause the service to be less tolerant and more interfering in its character. Sublimation can only be attained by growth, but in the projection mechanism, a part of the individual still remains undeveloped and unchanged, and therefore there is conflict and a tendency to emotional instability.

Much that passes for disinterested propaganda is in fact due to this unconscious projection mechanism. The guilt and inferiority of adolescence is frequently the cause both of a desire to "save" others, and also of a wish to be for ever teaching other people their business. The mechanism of projection accounts for a great deal of unjustifiable interference, which poses as being disinterested, but is in fact only due to this need for an unconscious defensive mechanism. Enthusiastic propagandists thus derive much of their enthusiasm from ego-centric sources.

This projection mechanism is one of the most important in the psychoses and psychoneuroses, and most commonly occurs in ideas of reference and of persecution.

CASE V.—Male; unmarried; aged 57.
Complained of: Depression and insomnia.
Duration: One year, dating from a serious financial failure.
History: He had had a nervous breakdown at the age of 21, with intense feelings of guilt, from which after a few months he had recovered, and been able to go into his father's business. In the course of time he became managing director, and as the business expanded largely of its own accord, he was carried on with it, assuming at the same time various social responsibilities, although he never married. Following post-war inflation, the business failed, and he *lost* fortune, reputation, and mental stability. His adaptation was firstly by illness—but how to explain to himself his failure? He was in a nursing home a year after, when he said "Doctor, I have something most serious to report. My correspondence is being tampered with, someone is reading my private letters and moving my papers." This was the first evidence of a *delusion of persecution,* for the motive of which it is not necessary to seek far. *If he was the object of malevolent persecution, he was not responsible for his own failure.* The defence mechanism had taken a year to show itself, it was unconscious and uncontrollable, and not open to reasonable proof to the contrary.

CASE W.—Male; aged 31; married.
Complained of: Alcoholism, latterly acute.
History: His most noticeable superficial characteristic was his conceit, which was apparent in voice, manner, and behaviour. He had never been able to accept the idea that he could do wrong or be less than the highest, although he felt constantly and fundamentally inferior. He commenced drinking in order to "fill the gap," and as the gap widened he drank more, until he was consuming a bottle and a half of whisky a day. His family tried to take the alcohol away from him, which was sufficient foundation for him to develop delusions of persecution. He had always felt neglected and misunderstood, but now he was sure that he was *the object of* a vicious persecutory system, to which he reacted by violent and destructive behaviour, writing most abusive and wholly unjustified letters, especially to those relatives of whom he had previously been most fond. Only in this way was he able to fulfil his need for self-love and self-praise.

It is sometimes startling to see the lack of originality which these unconscious mechanisms display. A doctor, who had actually had many years' experience both of psychiatry and psychotherapy, developed just those ideas of persecution by malign and supernatural forces, with wireless messages, smells under the door, and movements by unseen hands, which he must often have observed in his psychotic patients.

IDENTIFICATION.

It is not by any means easy for anyone to be a perfect and superior hero, because it involves risks and responsibilities which clash with our feelings of fear, guilt, and inferiority. What is desired, therefore, is to have the feeling of perfection without the risk of failure, and this may be achieved through the mechanism of identification. It is not ourselves who are the perfect superior hero, but someone else, and we derive our satisfaction from being identified with him. For the purpose of this mechanism, he is part of our "undifferentiated ego." When we read, we very easily identify ourselves with the characters of the story, and the same applies to dramas of the stage and screen. Much of our satisfaction is vicarious.

and our emotional participation depends upon identification with someone else.

Partisan feeling, which is liable to be very intense, derives its activity largely from identification with the leaders and heroes of the movement. In an earlier chapter imago identification was compared with the rebellion motive, as the source of the right and left wings in politics respectively :—

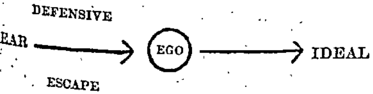
> "Every boy and every girl born into this world alive,
> Is either a little Liberal or else a little Conservative."

The partisan feelings of politics are due to what may be called positive and negative identification, the latter being as opposed to, as the former is imitative of, authority.

Identification is perhaps the most useful and least harmful of any of the unconscious mechanisms as an escape from fear, guilt, and inferiority. It does not involve us in any degree of responsibility as the over-compensation mechanism does, nor does it cause us to interfere with the liberty of others, as does the mechanism of projection. It provides, on the other hand, an opportunity for extending the limited experience and emotions of our own lives, through the greater variety of others, perhaps more fortunate than ourselves. It cannot be said, however, to be altogether without disadvantage, because it frequently involves us in intense emotions and conflicts, of the source of which we probably remain quite unaware. The partisan feelings which are so readily aroused in politics and religion are apt to involve our feelings very strongly and to cause us to rationalise, where reason alone would leave us quite unmoved.

Unconscious Defensive Mechanisms and Ideals.

It is a common experience, when trying to educate a patient to regard himself psychologically, to be told, "But, Doctor, you will rob me of all my ideals." There is, however, a very great difference between ideals and the defensive needs of unconscious mechanisms. The unconscious defensive mechanism is always vis-à-tergo, whereas the ideal is vis-à-fronté. The one is a kick from behind, whereas the other is a pull from in front. The one is motivated by intolerable feelings of fear, guilt, and inferiority, whereas the other is motivated by a wish to achieve a certain goal, irrespective of what obstacles there may be in front, or compulsions behind.



From the point of view of the freedom of the dividual motive, there is a fundamental difference tween the individual who is *striving after the goal the ideal*, and the one who is merely *striving to ape from his own intolerable feelings*, although e conduct of the two may seem the same. For ample, a "bad" boy may be made "good" by a rashing, but the change is likely to be largely an ternal one unless fundamentally he *wishes* to be od or, in other words, unless goodness is his ideal, ther than his defensive escape from another rashing. The distinction is one of very great ychological importance, and deserves deeper preciation by church and educational authorities. *tives are more important than behaviour*, and ychologists can therefore appreciate the truth of the familiar text: "As a man thinks in his heart, so is he." (Proverbs.)

At the end of a Freudian analysis it is sometimes remarked that the patient seems to have lost his ideals to such an extent that life has become robbed of much that previously made it worth living. The patient has become "disillusioned," but it seems to be part of the Freudian theory that ideals are not different from illusions. It is right that an analysis should rob a patient of those *phantasies*, which he had previously confused with ideals. To be *dis-phantasied* is the right measure of disillusionment, but to be dis-idealised altogether is surely to carry the process of realisation a great deal too far. It seems, however, to be a very dangerous part of the Freudian theory, that all seeking after goodness, truth and beauty, power, heroism, and all such ideal goals are, in fact, only motivated from a desire to escape from intolerable feelings of fear, guilt, and inferiority, and do not represent a striving after reality at all. But why is this most destructive and disheartening hypothesis necessary? It fits only part of the facts, not all. There are certainly many people whose wish to be a hero is due to their fear of being a coward. There are others who have no fear of being a coward, but who are quite equal to playing the hero's part, in search of an ideal. There is much false goodness and false beauty that is due to a camouflage of evil and ugliness, but surely all goodness and beauty does not spring from this tainted source. Usually it is quite possible to distinguish two entirely different motives, on the lines of those which have been suggested above. On the one hand there is the neurotic compelled from behind, on the other there is the normal person whose spontaneous wish is to follow the ideal, the pursuit of which is at least potentially independent of unconscious and protective motives.

The evidence upon which the Freudian theory has been established would seem to have been drawn too exclusively from the lives of neurotics, without taking into consideration the fact that neurotic psychology by no means covers all the ground of human experience. Fear, guilt, and inferiority may be the characteristic underlying feelings of the child, the neurotic and the savage, but life offers more than this. What we need is to find our individual and social freedom and psychological health in pursuit of an ideal, independent of all unconscious defence mechanisms and other concomitant feelings. The Freudian analytical school has been in danger of destroying and denying life altogether, in its pursuit of inexorable unconscious determinism. There is more in life than psychopathology, and the goal which we are seeking is ultimately more important to us than the source from which we have sprung.

Fear.

Let us consider in further detail the character and origin of these fundamental emotional discomforts. In order to see them in their right proportion it is necessary to realise that the feeling which is aroused always tends to be *greater than that which is appropriate to the immediate cause which stimulates them.* It is as if fear, guilt, and inferiority are the powder which propels the bullet, whereas the immediate cause of the feeling is only the pressure on the trigger of the gun. A very small stimulus may therefore produce what appears to be an unreasonably large response. Affects aroused by apparently innocuous stimuli may be extremely severe, owing to the fact that unconscious sources of emotional discharge have been unduly activated. It is, as a rule, impossible to find in the individual's experience any adequate cause. The only explanation would seem to be that the potentiality for the affect is inborn, and is due not to individual factors at all, but to racial and physiological ones.

WHEN DO WE FEEL AFRAID?

Watson, in his experiments on infants and children upon which he has based his "Behaviourist Psychology," found that the normal stimuli which aroused fear were those which introduced the *sudden* or the *unfamiliar*. In general it may be said that the feeling of fear is associated with a feeling of *inadequacy*, such as may occur in the common fears of the dark or of being alone. Another fear, rather different in kind but similar in its feeling of inadequacy, is that associated with *punishment*. This type of fear is particularly found in connexion with "father imago" and its derivatives.

Fear is one of the emotions which undergo recapitulation in the individual life. It is a very common experience for children to develop fears, such as fear of the dark, without any apparent external cause. Whether they are told fairy stories of giants and ogres or not, they will develop them for themselves from their imagination, and also the fear feelings appropriately associated with them. These are phenomena of recapitulation and must be dealt with as such. It is a great mistake, if a child is afraid of the dark, to deal with it as an opportunity for producing moral stamina by telling the child not to be so silly. The child is not being silly at all, but is recapitulating ancestral fear which was, at one time at any rate, quite justified. If the child is given a night-light it will very soon grow out of the fear. But perhaps an even worse method of overcoming the fear than by moral and disciplinary exhortation is that of introducing "compensatory phantasies," such as guardian angels. To do so only adds a further difficulty to the child's mind, and does not remove the cause of the fear. Any such suggestion in the first place has probably been derived from an adult wish-fulfilment phantasy, and the child would much prefer to have his bedroom lit by a night-light rather than populated by these unseen ghosts.

The worst kind of fears are always the formless and unseen ones. If fear is going to be recapitulated, it is wiser to give it a simple form which the child can appreciate. It is not perhaps altogether without purpose, that a child who does not hear of giants and witches and the like from fairy story books will create such forms for himself out of his own imagination. They serve to give shape and simplicity to the intangible, and therefore perform a useful service. It is impossible to keep fear out of a child's life, because its life is so much more than its own experience. On the other hand, the greatest dis-service is done to a child by those who exaggerate fears which must inevitably be present. If giants and such fearful characters occur in the child's fairy stories, they should always do so as figures of less importance than the heroes and good fairies who cause their well-merited downfall. In other words, fear should be formed only as a means to its eventual dissolution. Fears which are due to recapitulation will rapidly be outgrown, unless they are exaggerated by moral or imaginative mismanagement.

THE CAUSES OF FEAR.

We may classify the causes of fear under the three following headings: (1) real external (allo-psychic); (2) transferred external (endo-psychic); (3) real internal (somatic).

Real External Fear (*Allo-psychic*).—By real external fear is meant that feeling which is aroused by any appropriate source of danger directed against the individual—e.g., a burglar or a mad dog. An adequate stimulus is present and the fear response is not unduly exaggerated.

Transferred External Fear (*Endo-psychic*).—But the probability is that a certain amount of transferred affect usually occurs, in addition to the feeling of fear which is aroused by real external danger. For instance, the fear of burglars is very common in elderly spinsters, who, in addition to the real but rare possibility of danger, are inclined to introduce a large amount of transferred affect and thereby make a complex of it. They lock the doors, bar the windows, and keep perhaps a cricket stump under the bed for their better protection. Their attitude, and the measure of their fear, is not appropriate to the actual danger. The measure of the excess of their fear is due to a transferred affect from some other cause. In the case of the elderly spinster, it is probably a fear of men in general, due to that repressed desire which is either the result or cause of their celibacy, and wish-fulfilment may well be considered at least partially responsible for the introduction of the cricket stump.

All abnormal fears are characterised by their intensive but unreasonable nature. Phobias are those abnormal fears which are attached to some particular source, such as agoraphobia (fear of open places), claustrophobia (fear of closed spaces), and acrophobia (fear of high places). The origin of the first two of these is still rather uncertain. The one is as much a fear of being confined as the other is of being unconfined. They are both characteristic of certain neurotic states and may sometimes occur in the same individual. It has been suggested that claustrophobia is associated with the birth trauma and that the fear is thus derived from the experience of passage through the womb. Certain cases have been reported which have cleared up after the recovery and abreaction of memories of experiences which have been forgotten, such as being shut into a dark passage or closed in a chest or cupboard during a game of hide-and-seek. There is, however, a more general aspect of the problem of claustrophobia, which links it with that of agoraphobia, with which it is so frequently associated.

If we consider the primary distinction of experience as being between what is "me" and "not me," the affect of "me" towards "not me" in claustrophobia is that it is *unfriendly, uncontrollable and confining "me" against my wishes*. On the one hand there is frustrated wish-fulfilment, and on the other the cause for the frustration is blamed upon "not me." The tendency then to *personify* what is feared is a very usual and elementary one.

The picture in claustrophobia is therefore one of a person who has isolated himself from life and who, feeling unfriendly towards life because of his frustrated wish-fulfilment, has projected that unfriendly feeling upon life as an explanation of his frustration. Both in claustrophobia and in agoraphobia there is the same lack of friendly coöperation between the "me" and the "not me," the same sense of exclusiveness, frustration, and confinement. In general we may suppose therefore that the explanation of such a phobia probably lies deeper than its relation to any single experience. It is the result of a fundamental *attitude towards life* on the part of the patient, in which, because of his fear, he has chosen the path of loneliness rather than coöperation, and projected his own feeling of unfriendliness towards life on to life, which has thus become personified and pictured in terms of loneliness and compulsive confinement.

It is easier to understand the mechanism of the transferred affect in acrophobia (fear of high places) which is very common, and often occurs in those who have no other obvious neurotic tendencies. It seems, however, to occur in a certain type of individual in whom *ambition is associated with timidity*. Their ambition is to be *high*, but their timidity wants always to be *safe*. When we are walking along a road, or sitting in a room, we receive a number of sensory impressions which all tend to give us a feeling of familiarity and security. Without thinking about it, our eyes are registering the fixedness of objects, and our sensory nerves are feeling those sensations to which they are accustomed. Standing on the edge of a high cliff, however, the sensory impressions are very different. The wind is moving and intangible, the sky is moving over our heads, and the sensory impressions are those of insecurity rather than security. The need therefore is for *protection and safety*. Unconscious values are simple and permanent things, and to the unconscious *height means insecurity*, and only at the bottom is the norm of unconscious safety attained. The impulse, therefore, is to escape from insecurity to the norm of safety. It is typical of many unconscious tendencies, that their impulses may lead to actions which have quite an opposite effect to that which is desired. To the unconscious to reach the bottom means safety, even if, when the action is carried out by jumping from a height, it may be fatal. A similar example of unconscious logic occurred in a patient who said "I am so terrified of death that I would willingly take my own life." But such statements become quite understandable, when interpreted as symbols and transferred affects.

Phobias, then, are always to be understood in terms of symbolism and interpretation. When viewed in this way they are not so unreasonable as they seem, because they are found to have a real cause, although this is always different from the phobia itself. Many people have a phobia of thunderstorms. One patient said that he could not bear the unreasonableness and uncontrollability of a storm. His fear was more of the thunder than of the lightning, although he knew that there was more reason to be afraid of the latter than the former. He said that his fear was of being *punished* by death or injury during the storm. His association with the thunder was thunder-bolts and Jehovah. It would seem that the unconscious attaches the primitive value to the thunder-storm of a malevolent, punitive power seeking to destroy the individual for some wrong which he has done. The thunder-storm is therefore associated in the unconscious with father imago feelings of guilt, fear, and inferiority.

Another very common phobia is that of mice, which would again seem to be unreasonable, the mouse being a most inoffensive animal. This phobia is almost exclusively confined to the female sex and the typical attitude of defence is for a woman to jump on to a chair, pulling her skirts around her knees, with her hands in a protective attitude. A woman will usually say that she is afraid of the mouse running up her skirts, but it is doubtful whether one in a thousand, who has the phobia, has ever heard of this happening. Again it is a matter of symbolism, and the mouse has for some reason become the object of transferred fears which are sexual in origin. The symbolism may be explained perhaps by the fact that the mouse is an animal whose life is largely spent in the dark, in holes.

The snake is, in many countries even where snakes are rare, a common symbol of the same kind, and it is quite usual to find patients who have transferred the fear of snakes to the most harmless worm, the source of the feeling being the same in each case.

The feeling of unreasonable fear may be transferred to everything, harmful or otherwise, in certain neurotic states, in which case the term "pan-phobia" is used. It is then not so much a question of symbolism, as of a general state of fear of life becoming transferred to anything and everything.

Anxiety States.—In the word "panic" we have an interesting philological clue to the psychopathology of the anxiety state. The word "panic" is derived from "Pan" the Greek god, who was to his worshippers an object both of sexual excitement and of fear. The rites associated with his worship gave free expression to both these emotions. Fear is intimately associated with the sex life, and it seems probable that a certain combination of these two feelings is frequently responsible for what is known as the "anxiety state."

The characteristic emotion of the anxiety state is *fear*, the source of which is in many cases, although some psychologists would say all, regarded as being *sexual*. The anxiety state was suggested by Freud to be due to sexual stimulation without sufficient satisfaction. It is certainly liable to occur to a mild degree in engaged couples, and is very common in one or other partner in those marriages where sexual intercourse is not normally satisfying. It is also frequently associated with the practice of *coitus interruptus*, especially where there are other predisposing psychological factors. It is therefore always advisable to investigate the sex life in cases of anxiety neurosis, but it is probably wrong to regard the sexual factor as being the invariable cause.

The anxiety state is particularly interesting and important, because of the physical comcomitants which so frequently accompany it. The mental state is one of general irritability and hypersensitiveness to noise, light, and other stimuli. But the anxiety attacks frequently take a physical form, the disturbances being cardiac, respiratory, or vasomotor, with trembling, diarrhœa, vertigo, stammering, &c. In such cases it would seem that the emotional state has caused a disturbance of the sympathetic system, with the appropriate physical consequences due to its over-activity. Their treatment on organic lines without regard to psychopathology, must therefore always prove unsatisfactory and disappointing.

Real Internal Fear (Somatic).—Emotional states are liable to give rise to somatic disturbances, through stimulation of the adrenal glands and the sympathetic nervous system. It would appear, however, that this process may be reversed, and that emotional disturbances may be caused primarily in the somatic system. The simplest type of such cases are those associated with hyperthyroidism, in which a resultant anxiety is a common factor. The difficulty from the point of view of diagnosis is that a primary over-active thyroid gland may itself cause emotional disturbances, whereas on the other hand primary emotional disturbances may cause a secondary over-active thyroid. The process is reversible, and either somatic or psychic causes may be primary. We are still very ignorant as to the pathology of the sympathetic system and the endocrine glands, but it would appear that many symptoms of which patients complain are due to vague endocrine or sympathetic disturbances. Such patients are readily labelled "neurotic," but it is very difficult to relate any psychopathology with their symptoms, and an increase in our knowledge is required before we can treat them properly. The following case is an example.

CASE X.—Male; unmarried; aged 28.

Complained of: Attacks of morbid fear. These were liable to come on at any time, whether he was reading the paper by the fire, buying an article in a shop, or walking in the street. The attack was always somatic, being centred, as he described it, "in his solar plexus with a hot squelchy feeling as if his stomach was all alive, suddenly on fire, or turning inside out." He stated that words were entirely inadequate to describe these feelings. At the same time his spine seemed to be electrified and he had an uncontrollable feeling that he was going to die on the spot. The attack usually lasted for a few minutes, during which he felt that he must run somewhere, anywhere, but away from where he was.

History: His attacks had commenced soon after an attack of blackwater fever which he had contracted in South Africa. The physical pathology showed nothing of importance and his physical state appeared normal. His psychopathology was investigated, but there did not appear to be adequate cause for his anxiety attacks. He stated that he never used to feel afraid of anything, and quoted as an example that, as a small child, he had been elephant hunting with his father, when a herd of elephants had dashed past within a few yards of him. He remembered the experience perfectly well and his recollection was not associated with fear.

Similar cases in which intense somatic disturbances are apparently associated with sympathetic disorder are not infrequent. Such patients seem to be endowed with an unstable sympathetic system, which tends to react with an exaggerated response to quite minor stimuli. They may be classified as belonging to the "sympathico-tonic" type, which has been differentiated from the "vago-tonic" by some writers.

Another group of vague disturbance of the sympathetic nervous system is that which occurs in pregnancy, with the common somatic disturbances of nausea, vomiting, respiratory and psychic symptoms. It may be that the patient is unconsciously afraid of the pregnancy and anxious to get rid of the child. On the other hand, it is impossible to exclude the possibility that the disturbance may be primarily somatic, due to some instability on the part of endocrines and sympathetics, and such cases are by no means lightly to be labelled as neurotic, as in our present state of knowledge we do not know sufficient as to the precise ætiology of their symptoms.

FUNCTION OF FEAR.

Fear is as a rule described as one of the instincts, its function being *protective*. Psychologists differ, however, as to whether fear is a feeling aroused as a preliminary to flight, or whether it is only caused by flight being impeded in some way. The fact would seem to be that whatever the functional utility of fear may be in the primitive state, it is for civilised man only a deterrent to any useful protective activity. The emotion of fear is accompanied by adrenal stimulation, through which mechanism the body is thrown rapidly into readiness for intense physical activity, either of fight or flight. Perhaps fear has no biological utility whatever, but is only an emotional consequence of adrenal and sympathetic activity? From the point of view of utility, what is required is not fear but *caution*, and fear may therefore always be regarded as an undesirable affect. There are many occasions in which discretion is the better part of valour, but there is no advantage to be gained by feeling afraid.

CHARACTER OF FEAR.

It is very difficult for anyone who has had no personal experience of neurotic and psychotic fear, to appreciate the intensity of the feeling which may be aroused. Fear is not only a response to an external stimulus, it is a throwing into a state of active volcanic eruption of an inward feeling which may be massive, unlimited, and undifferentiated. It is no use telling a person in a state of unreasonable fear that there is no need to be afraid. The situation is far beyond the reassurance of words. In its extreme forms, the emotion is unreasonable and uncontrollable and completely devastating. It is beyond control because it is beyond comprehension, and it is not related to individual experience. It is derived from unconscious racial sources and is possessed of unconscious racial power. It is probably true to say that there is nothing more worth being afraid of than fear.

Fear and its Defence Mechanisms.

Fear is one of the intolerable emotions and will therefore give rise to defensive mechanisms for individual protection. These may be divided into: (1) regression; (2) over-compensation; (3) apprehension.

Regression.—When faced by an object of which we are afraid there are only two active alternatives, fight or flight. The latter, however, may be achieved by subtler methods than physical running away. Flight into phantasy is a common way of evading the real object of fear. The unconscious defensive mechanisms which have already been alluded to may also serve in some measure to evade it. But where the will to progress is weak and the element of fear is strong, the direction of life may become turned backwards to what is termed "regression." Instead of striving onwards to a goal, life aims at seeking backwards to the protection and priority of infancy. The more unconscious is the fear, the more uncontrollable will be the impulse towards regressive flight. This goal of infantile dependence, security, and priority is to be found in association with the familiar infantile past, the mother and the hypothetical Nirvana of the womb. It is generally believed that this regressive psychology is that which is most strongly developed in the psychosis of dementia præcox, in which the will to live and progress has been forced, by fear of reality, to escape from the responsibilities of life into phantasy and the backward-seeking path. Another factor in this disorder will be referred to in the next lecture—namely, *over-compensation for a feeling of inadequacy.* This, together with the seeking of an infantile Nirvana through a reversal of life's motive to regression, and an exaggerated activity of the picture-thinking level of the mind, will be found to explain the greater part of the psychopathology of dementia præcox.

Fear is the greatest enemy of psychological growth and progress, and is the natural antithesis of love, which "casts out fear," and is the fundamental urge which strives towards creation and progression.

Over-compensation.—Over-compensation for a feeling of fear is very common. Many soldiers in the late war only retained their nerve and self-possession by means of an over-compensated feeling that they bore a charmed life. Whatever might happen to others, they were able to feel that it would not happen to them. Women whose husbands were at the front were sometimes able to feel the same sense of the miraculous protection of their loved ones: they could not die. This feeling was so strong that for many months after the name had appeared in the casualty list "killed in action," the woman at home remained convinced that it was not true. Fearlessness is often of this type of fear of being afraid. Such a double fear was the cause of many neurotic breakdowns during the war.

The bully, the bluffer, and the braggart are all examples of over-compensated fear. The bully is a coward, and therefore he needs to be a bully; the person who bluffs needs to bluff for fear of his deficiency being found out; and the braggart combines love of exhibitionism with a need for over-compensation, because he has very little to boast about.

Apprehension.—The word "apprehension" is very useful to us in this connexion, because it covers the two meanings, both of *fear* and of *clutching hold* of something in defence against the source of the fear. The "drowning man who clutches a straw" is typical of all apprehension. He is afraid and he clutches the feeblest hope of security. The apprehensive person is always trying to clutch something. He always wants to be sure of knowing the way and seeing every detail; he is afraid of all that is new and unknown, and clutches on to all that is past and familiar. Such a person is liable therefore to devote his energies to formulating fixed opinions and preserving the *status quo*. But above all, the apprehensive personality is afraid of the freedom of his own emotional life, and in general of "letting himself go." He is liable to be commercial and competitive, his fear dictating his need for the material form and substance of power. He tends to develop the conscious and intellectual side of his personality at the expense of the emotional and spontaneous, because words are so much more stable and fixed than feelings. His clutching of all that is fixed and tangible leads him to depend upon logic and reason and to avoid everything that he cannot understand and define. The "high-brow" is typical of the apprehensive personality, protecting himself with formulæ and shibboleths within the exalted chivalry of the exclusive group. The apprehensive personality is always seeking for fixed familiar forms to protect him from the unknown, the new, and the free. He craves for detail, order, and repetition. In his conversation he says "always" and "must," where "sometimes" and "perhaps" more nearly meet the facts. He is more ready to answer than to question, because he prefers the finality of the end to the dubiety of the beginning. He is prone to intolerant propaganda and interference, blaming external circumstances and criticising others, rather than seeking the cause of his difficulty within himself. He is liable to be a great talker, because words are something to hold on to and so are listeners, but he is at the same time inclined to be artificial and conventional, even if his feelings are rebellious against authority. He is repetitive rather than creative, seeking the safety of "I ought" rather than the freedom of "I will."

It is often said that the modern increase of mental disorder is due to the additional strain imposed upon humanity by the progress of civilisation. But it might perhaps be suggested that the *psychology of apprehension is characteristic of the present civilisation in which we live.* We live in an era of intellectuality and mechanical discovery, the concomitants of which are the piling up of defensive armaments and a tendency to ignore the deeper emotional truths of life. Rationalisation is the order of the day, in industry as well as in religion. Sexual hygiene is either not regarded at all, or only as a source of apprehension. From this point of view, we may tentatively raise the question whether the cause of the growth of neurotic manifestations at the present day is not due to the fact that civilisation as a whole may have been largely motivated in its unconscious organisation by fear?

Case Y.—Artist; Irish; aged 37.

Complained of: Phobias, chiefly of thunderstorms and of insecurity. The symptoms dated from a Zeppelin raid during the war.

History: As a small child the patient did not see very much of his mother, who, partly for reasons of invalidism and partly because of her other interests, did not spend much time with her children. His father was a commercial traveller and spent a large part of his time away from home. The boy was, therefore, brought up in the first place by a nurse, but as a child he remembered longing for the presence and affection of his mother.

When he was old enough to go to school, his education was undertaken by Roman Catholics, who interpreted life largely in terms of fear and guilt. However, he received a very good grounding in philosophy. He remembered when he was about 14 the very terrifying experience of being prepared for confirmation. His instructor had been speaking very intensely on the subject of guilt, and the patient described the relief which the whole class seemed to feel after an outburst of uncontrollable laughter which was, of course, severely rebuked. This came up in association, during one of the early interviews, when the patient described how he had been unable to control apparently pointless laughter on leaving the analyst's room. (The laughter in both cases seemed to have been defensive against an overpowering affect relative to his "father imago.")

In his early student days he developed a rebel phase, during which he joined an Anarchist society. His first marriage was to a very intellectual Frenchwoman who was an ardent devotee of various "Neo" cults. The marriage, however, did not last long and he was divorced. He stated that he had always experienced a conflict with regard to the woman whom he loved, which he described as best expressed by the phrase which had always remained in his mind of particular significance: "Neither with thee nor without thee can I live."

Besides his art he had two hobbies, mechanics and philosophy, but to all the same phrase applied. As a creative artist his work was noted for its meticulous attention to detail, and he described the way in which he would get lost in trying to find the ultimate finality of a single minute detail. In all he did he was seeking for finality, but he was more successful in mechanics than in philosophy, although the same tendency was present in the latter. He developed a highly rationalised system of belief and was able to state "I do not believe in personality. Personality depends not on ourselves, but on interactions with other personalities. A person born and living alone on a desert island would have no personality at all." He was thereby able to prove to his own satisfaction, although he did not realise it, that he was *not guilty*, because where there is no personality there is no responsibility, and where there is no responsibility there is no guilt. "Similarly," he said, "the rational point of view has eliminated sin, God and the after life."

His philosophy, his art, and his mechanics were all protective against an unconscious feeling of fear and guilt, and it required the "imago" feeling of a Zeppelin raid to produce a crack in his rationalised protective system.

Charing Cross Hospital: Nurses' Home.—It is announced that a new appeal for £100,000 is to be launched for Charing Cross Hospital to build a new nurses home at Hampstead. This will release space at Charing Cross for the provision of private wards for paying middle-class patients.

Worcester Doctors and Contributory Schemes. Worcester Infirmary committee have appointed a special committee of medical and lay members to consider the allocation of money received from contributory schemes and public authorities for the work done in the treatment of patients. At present the whole of the money goes for the maintenance of the patient, but it is felt that the honorary staff should receive a certain small percentage of the contributory scheme money. Patients naturally look upon the contributory scheme as payment for maintenance and staff. In practice, however, they have treatment free.

SPECIAL ARTICLES

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

LEGALITY OF ARTIFICIAL ABORTION.

THE question whether artificial abortion should be made legal in the new criminal code has led to much discussion, both public and professional. The Berlin Medical Chamber gave its opinion some time ago,[1] and now the Hamburg Medical Chamber has collected the views of practitioners in its area. The object was to ascertain whether they wanted an alteration in the present state of the law, under which, strictly speaking, medical men are not allowed to produce artificial abortion at all. The following questions were asked: Do you desire that abortion should be legal, if the life of the mother is directly endangered by pregnancy (Yes, 880; No, none) or if the health of the mother is probably endangered? (Yes, 839; No, 41). Do you wish abortion to be legal if performed on eugenic grounds (Yes, 583; No, 272) or if the condition of the family requires abortion although the medical indication is doubtful? (Yes, 691; No, 178). Is it desirable on purely social grounds? (Yes, 339; No, 517). Should abortion be performed without any indication by every qualified medical man? (Yes, 41; No, 839). Should it be allowed only in certain clinics or hospitals? (Yes, 25; No, 865). Is it permissible in cases of rape and incest (Yes, 810; No, 56); in girls under 16 years of age (Yes, 607; No, 243); if there are more than four children already living (Yes, 418; No, 437); if the mother has become pregnant after too short an interval (Yes, 497; No, 360); or women over 40 years of age? (Yes, 353; No, 491). Should it be allowed only if the husband agrees? (Yes, 511; No, 266; Yes, with reservations, 101).

The form was forwarded to 1266 medical men, of whom 880 (i.e., 70 per cent.) returned it. It follows from the investigation that the majority of Hamburg medical men want an alteration of the present law in the direction that abortion should be legalised not only for purely medical but also for other reasonable indications. They disagree with indiscriminate production of abortion.

SOCIAL INSURANCE IN FRANCE.

Before the German-French Society Dr. Decourt, general secretary of the Association professionelle internationale des médecins, lately read a paper on the new French social insurance law. He explained the great advantages of the French over the German law, its general principle being that the medical man is paid directly by the patient who recovers his expenses from the *Caisse*. The medical man is controlled in his doings exclusively by the medical syndicate and never by the *Caisse*. The French profession have successfully combated the introduction of the German system whereby the medical men have ultimately lost a good deal of their independence. Dr. Ritter, a member of the Committee of the Hartmannbund and president of its Berlin branch, congratulated his French medical brethren on their successful struggle and described the position of the German profession as very unsatisfactory because of its permanent struggle with red tape. He was glad to hear that in France, where social insurance is of very recent date, this condition is avoided, and he hoped that in the future, too, the French system may work satisfactorily.

ADVERTISEMENTS IN MEDICAL JOURNALS.

In Germany there are numerous medical journals having not a scientific but a purely professional character. Apart from the central journals of the profession (the *Deutsche Ärzteblatt* and the *Ärztliche Mitteilungen* being the official organs of the Ärztevereinsbund and the Hartmannbund respectively) there are journals in nearly every province or German State in which local questions are discussed. These journals are supported by, or edited on behalf of, the local medical association, or by the medical chamber of the district and are sent free of charge to the members. To cover the expenses they must have as many advertisements as possible, but certain nuisances have now developed out of this. Some journals still keep their official part entirely separate from advertisements, but in others advertisements have more and more penetrated the text and mixed with the editorial matter. A meeting convoked by the committee of the medical press, to which the editors of those journals were invited, adopted a resolution stating that editorial matter should be kept separate from advertisements, that articles sent by chemical works to recommend certain preparations must not be accepted at all or if accepted be inserted as advertisements, and that advertisements and editorial matter should be printed on different pages. It should be made obvious to the reader by special note that the editor is responsible under the Press Law only for the editorial matter and not for the advertisements.

SARCOMA OF THE HEART.

Dr. Denecke, of the Pathological Institute of Freiburg University, has described a case of sarcoma of the heart, of which, he says, only 40 cases have hitherto been reported. The patient's symptoms had been very indefinite and were ascribed first to pulmonary tuberculosis and later to gastric ulcer or cancer. In course of time he became very weak and an exploratory laparotomy was accordingly performed, but without result. A fortnight later he died, and at autopsy a spindle-celled sarcoma was discovered which nearly obstructed the whole right auricle. Notwithstanding this serious lesion the circulation was never troubled. The abdominal pains, which were very severe and made the diagnosis difficult, were probably due to irritation of the vagus nerve by the growth.

JUBILEE OF THE PHARMACEUTICAL SOCIETY.

The German Pharmaceutical Society has been celebrating the fiftieth anniversary of its foundation at a ceremonial meeting when Prof. Walden, of Rostock, read a paper on the rôle of the apothecary in civilisation. Paracelsus, he said, first pointed out that the aim of chemistry must be the preparation of remedies and not of gold or silver. After describing some of the scientific inventions which issued from the laboratories of apothecaries, he went on to speak of the international aspect of their work. Many apothecaries have left Germany to settle abroad, while others have come from foreign countries and have thus contributed to mutual understanding. While many have emigrated, there are, on the other hand, pharmacies which for centuries have been in the possession of the same family, the son following always the profession of the father. Despite the progress of the great chemical works with their gigantic laboratories and big staffs, there are still apothecaries who, under the modest conditions of their private laboratories, contribute to the progress of science.

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[1] See THE LANCET, 1929, i., 154.

INTERNATIONAL EXHIBITION OF HYGIENE.

The successful exhibition in Dresden, already described in these columns, has been closed during the winter, but will be reopened on May 3rd. Some new departments will be added, notably one on hygienic instruction and one on hygienic technique. Nearly all the countries and bodies represented in the exhibition of 1930 have agreed to take part in that of 1931, including France, Great Britain, Italy, Austria, Japan, South Africa, and also the Catholic missions, the International Labour Office, and the Health Office of the League of Nations.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

RADIUM AT VIENNA.

ON the advice of the chief of the Board of Health of Vienna (Prof. Tandler) the senate of the city has bought 5 grammes of radium bromide, at a cost of £60,000. This will be used like a radium "cannon" or "bomb" in large quantities at a time. An existing pavilion with 150 beds will be set aside in the municipal hospital in Vienna and will serve as a cancer ward, both for treatment and research. With this large quantity of radium—only surpassed by Paris with 6 grammes—Vienna will again be able to take the lead in Central Europe in the fight against cancer, which is now first among causes of death in our city. Prof. Tandler has personally studied the treatment adopted in the Radiumhemmet (Radium Institute) of Stockholm by Prof. Forssell. Two Viennese physicians of the Board of Health are at present working there so as to be fully acquainted with the Swedish methods, and one of Dr. Forssell's ants will work for some time in the Vienna institute. The Vienna health authorities aim at organising a first-class school of radium specialists. There are at present few medical men in Europe who really deserve this name. Radium has been variously used by groups of surgeons or gynæcologists or dermatologists independently of each other, and the technique of one group is not applicable to other groups of diseases. A real radium specialist should command the knowledge necessary to use this powerful and effective weapon in any kind of case. The Vienna Cancer Institute (which must not be confused with the Childs Cancer Hospital foundation, a private institute built by a grant from an American philanthropist) will be open to applicants from all countries—if their condition warrants admission—at a nominal cost. It will serve the double purpose of treatment and instruction, combined with research, and will also, it is hoped, regain for Vienna its reputation as a medical centre, which has been seriously prejudiced by certain actions of political partisans.

NEW HOSPITAL FOR TUBERCULOSIS.

The Vienna Board of Health has recently opened a new and up-to-date hospital solely for tuberculosis. The main building—to which two wings are attached—consists of a five-storey pavilion, in the centre of which two covered open-air terraces are provided. These terraces are on the fourth and fifth storeys. All the windows in the wards face south, and can rapidly be opened from top to bottom by a new system of sliding panels. Thus the room can be converted at once into an open-air terrace, for the entire south wall of each room is formed of windows. Heating is effected by hot-water piping; a volume of 32,000 cubic metres of rooms and passages is thus heated by 486 radiators, with a superficial area of 3500 square metres. The hospital will accommodate 320 patients (chiefly with internal tuberculosis), and special arrangements have been provided to exclude noise from bells, telephones, lifts. An exact system of electric visual signals indicates to the nursing staff what is going on or wanted in the wards, and the telephone calls are also by sight instead of sound. The leading idea of this hospital is to make the patients feel as if they were living in a comfortable private home. The rooms contain 1–3 beds only, except for a few rooms with 6 beds; they all have running hot and cold water, and are furnished more like a room in a modern hotel than like a hospital ward. The patients can wear their own linen, not the ordinary hospital gowns. The open-air terraces on the fourth and fifth floors are each 62 metres in length and 10 in depth. On the ground floor an uncovered terrace has been constructed which is 143 metres long and holds 250 beds, allowing the patients to get the full benefit of air and sunshine. The situation of the hospital on the southernmost outskirts of the city ensures a supply of pure air, while an inhalatorium, an electrotherapeutic department, and wards for pneumothorax and heliotherapy provide for therapeutic requirements. The cost of building the hospital amounted to 4·85 million Austrian schillings (£145,000) or 15,000 schillings (£440) per bed. This sum has been found entirely by the municipality of Vienna. The beds which have hitherto been occupied in the municipal general hospital by tuberculous patients have thus become free and will be used for the new cancer institute described above.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

PSYCHOLOGICAL PROBLEMS.

NEW premises for the Edinburgh University psychological clinic for children and juveniles have been established at the Jordanburn Institute. This clinic is exceptional in that it combines the expert in psychiatry with the lay psychologist. The staff will include a general physician, experts in psychiatry, and experts in educational psychology and in general psychology. Such work as has been done hitherto has been conducted at the University by the professor of psychology, mainly with delinquents. The professor, Dr. James Drever, will be one of the staff of the new clinic. At the opening ceremony Sir Thomas Holland, from the chair, indicated that the University would coöperate wholeheartedly with the Jordanburn authorities, and every effort would be made to secure that the various social agencies in the city, as well as the education authority, should have difficult children of every grade sent to the clinic. Mr. Mackechnie, secretary of the Scottish Education Department, indicated the extent of the problem in Scotland, and his desire that individual attention should be given not merely to the mentally deficient, but also to the "difficult" child, and that the problem of delinquency should be studied in its earliest manifestations. The premises are admirably adapted for the purposes of the clinic, and in organisation it probably stands in the front rank of this class of institution. The Jordanburn hospital has already been fully described in THE LANCET (1929, ii., 900), and this new clinic is due to the same inspiration.

The need of extension of the clinic system in dealing with mental disorders was strongly stressed by Dr. D. K. Henderson, when submitting his report at the annual general meeting of the Qualified Contributors of the Glasgow Royal Asylum. There were many people, he said, who considered mental disorder as a uniform group of disease, and who thought the essential point was the demarkation of sanity from insanity. The shades and degrees of mental disorder, however, were as infinite as the individuals affected. The ætiology covered a tremendous field, and the methods of therapy had to be elastic; many patients suffered from a degree of mental illness of a kind which would not react well to institutional treatment, and for them he thought it was of prime importance that a clinic should be established in affiliation with the general hospital system; and with this a department for research in such disorders. Dealing specifically with the work of the Glasgow Royal Asylum, he reported that 555 patients were resident, the total number under treatment during the year had been 686, and the discharges totalled 131, of whom 55 recovered, 20 were greatly improved, and 12 were not improved. The admission rate of 150 patients per annum would have been greater if they could have accommodated all those who applied for admission. It is possible that the more difficult economic conditions and increasing stress of life, added to the fact that the public had more confidence in institutions of this type, might all play a part in the increase. The directors had realised the necessity for providing suitable accommodation for those not sufficiently ill to need treatment in a mental hospital, and for this purpose the beautiful estate of Darleith Cardross had been acquired.

At a meeting of the county of Selkirk education committee attention was drawn to the incidence of mental deficiency, and the duty of the education authorities to keep mentally defective children under special observation. Mr. J. Easton moved that the education authority was of the opinion that legislation for the segregation or sterilisation of the mentally unfit was urgently necessary in the national interest. He did not hope or expect that any definite action or immediate legislation would follow, but he hoped to stimulate a frank discussion of general interest in this vital problem. In Selkirkshire they had about 1 per cent. mentally deficient children, which would give a figure of about 50,000 for all Scotland. The resolution was unanimously adopted.

RETIREMENT OF DR. KEAY.

Dr. John Keay is retiring from the control of the Bangour Mental Hospital, and it will be somewhat difficult to fill his place. Nearly 30 years ago the poor-law authorities of Edinburgh were severely criticised for their extravagance in providing this immense establishment, which is one of the largest asylums of its kind in this country. It was due largely to the inspiration of the late Sir John Sibbald, of the Board of Control. No doubt the scattered buildings were expensive; but the general view to-day is that the experiment has amply justified itself. To anyone familiar with the older systems of treatment in the mental hospitals, it was a positive inspiration to see the way that occupations and freedom were utilised in the treatment of the patients. Many years ago, in the earlier stages of its development, I went over this hospital with the official mental expert of the Board of Control of that date. We were immensely struck with the difference between the patients recently gathered in from other asylums and those that from the beginning had been treated in the new way. The success of the new system owes not a little to the sympathetic temperament and practical insight of Dr. Keay, who had had ample experience of the older methods. The appointment of a successor lies now with the Edinburgh Town Council, who are endeavouring to correlate under a single management the superintendence of this great hospital and the institutions for the feeble-minded. The new officer will also be available for school work.

A GLASGOW WAITING-LIST.

At the annual meeting of the Glasgow Victoria Infirmary it was stated that the number of sick people asking treatment at this hospital varied from 200 to 250 on any one day, and that for the whole city there must be over 2000. This is a vague statement, but it has a real significance in that it deals only with the persons needing hospital treatment according to present standards. When the larger question of hospital treatment for bronchitis, infantile rheumatism, &c., comes to be discussed, the number described as needing treatment will be very much higher.

ROYAL MEDICAL SOCIETY DINNER.

A company of nearly 200 attended the dinner of the Royal Medical Society held on Feb. 19th in the Hall of the Royal College of Physicians of Edinburgh. The Senior President, Dr. W. I. C. Morris, presided, and the guest of honour was Sir Robert Philip, while amongst those present were Lord Provost Whitson, Rear-Admiral Hallett, General Sir P. de B. Radcliffe, G.O.C. Scottish Command, the Right Rev. Dr. Bogle, Moderator of the General Assembly, Sir Norman Walker, President of the Royal College of Physicians, and Dr. J. Haig-Ferguson, President of the Royal College of Surgeons. Among many excellent speeches none was more interesting than those of Sir Robert Philip, who replied to the toast of The Guest and proposed the toast of The Society. He said it was more than 50 years since he became a member, while the Society itself was founded almost 200 years ago when there was no Medical Faculty in the University. His mind was full of happy memories of the Society and gratitude for the influence it had had on his life, for there was no doubt that the training and experience gained by students in the Society were of incalculable value. The Lord Provost in his speech referred to the desire of the town council to place the hospitals now transferred to their control from that of the parish council, at the disposal of the medical teaching in the city. This would increase facilities for clinical teaching, and allow a greater number of students to be admitted to the University. The chairman proposed the final toast of the evening, "Floreat Res Medica."

EDINBURGH HOSPITAL POLICY.

Last week, at a meeting of the Board of Managers of the Royal Infirmary of Edinburgh, the first public intimation was made of the new development scheme affecting the Edinburgh hospitals which are under public authority. It was emphasised that putting this project into force would in no way lessen the need for enlargement of the Royal Infirmary, for which purpose an intensive appeal for funds is now being made. Lord Provost Whitson, in a letter to the Board, explained that conversations are taking place between the Corporation and the University with reference to the possible extension of the facilities for medical teaching. The Infirmary is an interested party since it has an existing agreement with the University on the matter of teaching. A small sub-committee has been appointed to secure the coöperation of the interested bodies.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

MORE SWEEPSTAKES.

LAST week, in the Dáil, Dr. P. J. O'Dowd, a medical deputy, moved the second reading of a private Bill, the intention of which was to extend to county hospitals the privileges of the Public Charitable Hospitals (Temporary Provisions) Act, 1930, commonly known as the "Sweepstakes Act." He said that many of these hospitals were poorly equipped, and were unable to perform efficiently the work they were supposed to do. In many cases, also, the accommodation was insufficient. Another Bill with similar intentions had been introduced by Dr. T. Hennessy. Having heard a statement from the Minister for Justice, Mr. FitzGerald-Kenney, both medical deputies consented to withdraw their Bills. The Minister stated that, when the original Bill was introduced, he opposed it, not from any ethical objection to "sweepstakes," but because he foresaw the difficulty of limiting the operations of such legislation to the objects for which it was proposed. He had thought it inevitable that when the thin end of the wedge was got in, the wedge would be driven home until they had legalised sweepstakes for all classes of object. The present Bill justified his apprehensions, and he felt bound to oppose it. He went on to outline his own intentions. He intended to introduce a Bill himself which would empower him to set up a committee of experts to inquire into the eligibility of hospitals, the revenue of which was raised by voluntary subscriptions, to partake in the sweepstakes schemes. He would also include in the Bill a suggestion that 75 per cent. of the proceeds for the hospitals should go to the voluntary hospitals, and 25 per cent. to the county hospitals. There were certain other hospitals and sanatoriums doing good work for the poor, which did not come under the present Act, which he would like to see included. He wanted to make it clear that, on general principles, money in aid of public revenue or in aid of the local rates should not be raised by lotteries or sweepstakes.

It is not easy to reconcile the Minister's concessions and general principles with his specific proposal to permit the county hospitals to share in the benefits of the sweepstakes. The equipment of the county hospitals, just as much as their maintenance, is a responsibility of the ratepayers. If the ratepayers are permitted to divest themselves of their responsibility for equipment, there seems to be no reason why they should not also be permitted to apply the profits of sweepstakes to other methods of relief of the rates.

PUBLIC HEALTH SERVICES

ANÆSTHESIA IN MATERNITY CASES.

ON Nov. 25th the London County Council invited its Central Public Health Committee to consider and report as to the desirability and practicability of making arrangements to give light anæsthesia to mothers in childbirth in hospitals under the Council's control.

Information as to the extent to which anæsthetics, including sedatives and analgesics, were employed in the maternity wards of the transferred hospitals had already been obtained by the Committee in February, 1930. Out of 7454 patients delivered in these hospitals in 1929: 1 in 8·5 received either sedative, analgesic, or anæsthetic; 1 in 19·5 received a sedative only; 1 in 18 received an analgesic only; 1 in 89 received a general anæsthetic (mostly abnormal cases). At 4 out of 22 hospitals light anæsthesia was given to a few normal patients (mainly primipara). At 11 out of 22 hospitals analgesics were employed. At one hospital half the patients received this form of relief but in the great majority of hospitals only a very small percentage. Every hospital gave a general anæsthetic to abnormal cases requiring interference.

The Committee have just issued a report to the Council in which they point out that the more extended use of general anæsthesia, even in the intermittent form known as obstetrical anæsthesia, requires careful consideration from several aspects. There is considerable feeling in the minds of some of those in medical charge of the maternity wards against offering general anæsthesia as a routine to every patient, since they believe it to delay labour, increase the necessity of interference, and in other ways to augment the risks to mother and child. Again, some medical opinion is definitely against the administration of any form of general anæsthesia by nurses except under the direct supervision of a doctor. In the Council's hospitals all normal labours are attended by midwives only, and the presence of a medical officer in the labour room might well entail an increase of staff, for which accommodation might be lacking.

An unknown factor in estimating the degree of insufficiency of medical staff for the purpose is the number of women who would accept anæsthesia if offered. There is considerable prejudice against it in some quarters where its use has never been possible hitherto, but judging from the numbers of women who demand this relief, when they are in a position to afford it, the percentage of women asking for it in the Council's hospitals would ultimately be high, probably in the neighbourhood of 90 per cent. of the total. The Committee observe that the administration or supervision of obstetrical anæsthesia is not a particularly interesting or valuable experience to the young medical practitioner; in their view the duty of administering the anæsthetic should be carried out by a rota of the medical staff to be arranged from week to week, and not by a medical officer engaged solely for the purpose.

A difficulty in some of the hospitals would be the restricted labour room accommodation, and in others, with large labour wards, the need of more attention. In spite of these difficulties the Committee feel that the principle of providing facilities, where practicable, in the Council's hospital maternity units for the giving of light anæsthesia in normal cases of childbirth is one which, having regard to modern opinion and practice, should be conceded, at any rate for an experimental period, subject to review in the light of experience. It would not be possible in the ensuing financial year to make the necessary arrangements in more than a limited number (about six) of the hospitals containing maternity units, but subject to the approval of the estimates the experiment will be tried in these hospitals and its result will be considered after about six months' working.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 14TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 221 (last week 213); scarlet fever, 1642; diphtheria, 1280; enteric fever, 163 (last week 44); pneumonia, 2644; puerperal fever, 53; puerperal pyrexia, 115; cerebro-spinal fever, 52; acute poliomyelitis, 2; acute polio-encephalitis, 1; encephalitis lethargica, 20; relapsing fever, 1; continued fever, 1; dysentery, 31; ophthalmia neonatorum, 97. No case of cholera, plague, or typhus fever was notified during the week.

The 52 cases of cerebro-spinal fever were notified from the following 15 counties: London, 4; Devon, 1 (Plymouth); Durham, 4 (Sunderland 3, South Shields 1); Isle of Ely, 1 (March); Gloucester, 1 (Bristol); Hertford, 1 (Watford); Lancaster, 6 (Liverpool 1, Manchester 3, Royton 1, Swinton and Pendlebury 1); Leicester, 1 (County Borough); Middlesex, 1 (Willesden); Northumberland, 4 (Newcastle-on-Tyne); Somerset, 1 (Bath); Southampton, 2 (Hartley Wintney 1, Havant 1); Warwick, 1 (Birmingham); Wilts, 1 (Salisbury); Yorks West Riding, 22 (Barnsley 1, Rotherham 3, Sheffield 1, Hemsworth 1, Hoyland Nether 1, Maltby 4, Wombwell 1, Doncaster R.D. 5, Hemsworth R.D. 2, Rotherham R.D. 2, Wortley R.D. 1); Glamorgan, 1 (Pontardawe).

Of the 163 cases of enteric fever 150 were reported from the county of Essex, distributed as follows: Chingford, 3; Epping, 105; Leyton, 3; Loughton, 10; Waltham Holy Cross, 1; Walthamstow, 16; Woodford, 1; Epping R.D., 10; Stansted R.D., 1.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 17th–18th was as follows: Small-pox, 190 under treatment, 7 under observation (last week 206 under treatment); scarlet fever, 1499; diphtheria, 1910; enteric fever, 177; measles, 121; whooping-cough, 304; puerperal fever, 32 (plus 15 babies); encephalitis lethargica, 120; poliomyelitis, 3; "other diseases," 125. At St. Margaret's Hospital there were 10 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 80 (2) from measles, 9 (3) from scarlet fever, 59 (8) from whooping-cough, 29 (4) from diphtheria, 61 (19) from diarrhœa and enteritis under two years, and 456 (116) from influenza. The figures in parentheses are those for London itself. No death from meningococcal meningitis occurred in London.

The fatal cases of enteric fever outside London occurred at Stockton-on-Tees and Merthyr Tydfil. Twenty-four fatal cases of measles were reported from Liverpool, 14 from Newcastle-on-Tyne, 8 from Hull, and 6 each from Bristol and Birmingham. Leeds reported 5 deaths from whooping-cough, Birkenhead and Manchester each 4. Diphtheria claimed 4 victims at Liverpool. The 340 fatal cases of influenza outside London are scattered over 84 great towns: 22 were reported from Manchester, 17 from Liverpool, 16 from Newcastle-on-Tyne, 11 from South Shields, 10 each from Tottenham and Sheffield, 9 each from Southampton, Bolton, and Gateshead, 8 each from Croydon, Plymouth, and Preston, 7 each from West Ham, Hull, and Middlesbrough, 6 each from Nottingham, Oldham, Leeds, and Cardiff.

The number of stillbirths notified during the week was 278 (corresponding to a rate of 42 per 1000 births), including 51 in London.

PSYCHOLOGICAL CLINICS.—Psychological clinics are to be set up by the Birmingham General Hospital in conjunction with the Queen's Hospital for the treatment of mental disorders under the Mental Treatment Act.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointment is notified: Surg. Comdr. J. A. Maxwell to *President* for one month's post-graduate course, and to *Egmont*, for R.N. Hospital, Malta.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Comdr. F. J. S. Heaney is placed on the retd. l at his own request with the rank of Surg. Capt.

Surg. Sub-Lt. J. E. L. Morris to be Surg. Lt.

Prob. Surg. Sub-Lt. G. S. Thomas to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. W. Byam retires, receiving a gratuity, and is grant the rank of Lt.-Col.

Lt. (on prob.) R. L. Whittaker, from the secd. list, restd. to the estabt. and is confirmed in his rank.

The undermentioned to be Lts. (on prob.): W. B. William C. A. de Candole, O. Ive, I. H. C. Morton, and D. Langhorne

The undermentioned Lts. (on prob.) are secd. under provisions of Art. 205, Royal Warrant for Pay Promotion, 1926: O. Ive and I. H. C. Morton.

ARMY DENTAL CORPS.

Lt. (on prob.) W. C. Cook is confirmed in his rank.

Lt. F. J. McCarthy, temp. Dental Surg., Gen. List, to Lt. (on prob.).

ARMY RESERVE OF OFFICERS.

The undermentioned having attained the age limit liability to recall, cease to belong to the Res. of Off Lt.-Col. P. Hope-Falkner, Maj. R. M. Ranking, and A. E. B. Wood.

ROYAL AIR FORCE.

E. Corner is granted a short service commission Flying Officer for three years on the Active List.

Flying Officer J. Murphy relinquishes his tempo commission on completion of service.

INDIAN MEDICAL SERVICE.

Lts. (T.C.) to be Capts. (T.C.): N. C. Ramchandani M. Rodrigues.

The undermentioned officers retire: Lt.-Col. G. Graham and Lt.-Col (Bt. Col.) S. R. Christophers.

EARLY MENTAL DISEASE IN SUSSEX

For a quarter of a century the Lady Chichester Hosp at Hove has been engaged in treating cases of early nerv breakdown in women and children. Now, as the result a request from the governors of the Royal Sussex Count Hospital, Brighton, who have agreed to provide an o patients' clinic, a new wing is to be erected at the Hov institution to provide an additional 12 beds, six of wh will be for men. When this is provided it is claimed th the Lady Chichester Hospital will become a recogni centre in the south of England for cases of early nerv breakdown among the male sex. The estimated cost £10,000, and the scheme was launched by Lady Chich the President of the hospital, at a gathering at the Gra Hotel, Brighton, on Feb. 11th, when donations and prom brought the fund to £1126. Lord Hailsham, presided, spoke of the work of Dr. Helen Boyle starting the hospital, which, he said, made a spe appeal to public sympathy because it was so lar remedial and preventive in its purpose, because it stopp people from the miserable fate of being incurably ins and saved the State from having the citizen turned a burden instead of a help. Sir Humphry Rolleston the psychical and physical ills, like their adjectives, much alike and had much in common, and their r separation in the past, especially the mystery and sti that hung about mental disorder, must be regarded regrettable mistake. Sir Farquhar Buzzard pointed that one could not say definitely that the most physi healthy people were the most mentally healthy, nor cou restoration of physical health be depended on to bri restoration of mental health. The provision of appropri treatment for restoring mental health must not be shirke but he was nervous of those institutions which put too muc in the forefront the various physical methods of treatme

CORRESPONDENCE

CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—In a leading article last week (p. 419) the statement is made that during an outbreak of cerebro-spinal fever in Roumania where the mortality of cases treated by other methods was 65 per cent. "of 01 cases treated by serotherapy [the mortality] was 8·3 per cent. and (omitting cases which were omatose on arrival or died a day or two after dmission to hospital) 10·9 per cent., *figures which ompare favourably with the best results of univalent ype 1 serum prepared in the Medical Research Council's boratories in 1918.*"

I venture to think that the statement which I have alicised requires in simple justice considerable modification. The mortality of type 1 cases in military outbreaks from 1915–19 is put by Drs. C. Forster-Drought and A. Mills Kennedy in their aluable monograph on cerebro-spinal fever at 60 per ent. When monotypical serum, proved before issue to contain a definite amount of anti-endotoxin to type 1, was employed in the treatment of such cases careful and critical analysis of the results was made y Dr. T. G. M. Hine in two papers. The first, a hite paper printed by order of the Medical Research ommittee, and dated Jan. 28th, 1919, states that ut of 34 type 1 cases reported on up to that date, many of them severe, no less than 33 had recovered nder treatment with the monotypical serum. fter demobilisation of the Central Laboratory a nal survey of the results was made by Dr. Hine and ntributed to "Special Report No. 50, on cerebro-spinal fever" published by the Medical Research ouncil in 1920. Out of an aggregate of 65 type 1 ases treated with the monotypical serum 59 had covered and six had died, a mortality of 9·23 per ent.

As expressly stated by Dr. Hine, however, in the apers referred to, cases considered as moribund hen the treatment was first applied were included these figures, partly because their exclusion did ot appear to be justifiable, and also because when ven the monotypical serum some of them recovered.

I am, Sir, yours faithfully,

London, W.C., Feb. 22nd, 1931. M. H. GORDON.

To the Editor of THE LANCET.

SIR,—Your leading article sums up admirably the esent position; it is natural however that there ould be considerable difference of opinion about me of the points raised therein. Thus while the ticle wisely says that "in civil practice, apart from stitutions, it is usually impracticable to segregate l contacts and keep them isolated until the results the post-nasal swabs are known," yet it also seems suggest that in an infected community or institution it is worth while to segregate contacts, and rther to isolate those contacts who are proved by ne swab to carry meningococci in their throats. I have read it correctly it claims this to be the deal procedure in an institution.

There are however many reasons to regard this rocedure not only as not ideal but even as a vain ndeavour. First it has been shown that, in an fected community in which multiple cases of rebro-spinal fever are occurring, the carrier-rate ill almost certainly be high. Secondly it may be assumed that there will be hundreds of carriers to every case, and that in large collections of individuals (in barracks, schools, &c.) *living under similar conditions and circumstances* (mainly of intimate contact if not of crowding) the carrier rate of so-called "non-contacts" will be equal to that of so-called "contacts." Thirdly, even if the necessary bacteriological facilities are available for determining whether the organism is a true meningococcus, it takes time to get the result of a swab, and all this time rapid transference of meningococci is taking place, so that, when the result is known, some carriers will have cleared up, whilst others will have become infected. Fourthly, one swab is not a conclusive test.

While therefore there may be some justification for isolating the infected institution or community as a whole from the outside world, it is not desirable to isolate those individual carriers who as "contacts" have been found positive. A procedure more useful than such isolation is to diminish the mass-infection in the community by (*a*) "spacing-out" of beds; (*b*) improving the ventilation; (*c*) prevention of any indoor crowding in canteens, &c., and possibly, but much less certainly, (*d*) by exposure of all the individuals of the community to an antiseptic vapour spray as was done on the large scale during the war. The only case in which any benefit is likely to accrue from the isolation of the individual carrier is one where there are special circumstances of contact, which enable the "causal carrier" to be identified, such for example as have been recorded in instances where a soldier returning from an infected camp has infected his child at home.

Another point in which my experience leads me to disagree is with regard to the utility of sniffing up liquid disinfectants whether a solution of chloramine T or other fluids. Such a procedure is not without risk, and I have never been able to satisfy myself that it had any beneficial effect upon the carrier state in chronic carriers. Temporary carriers in good hygienic conditions clear up so rapidly (even without treatment) that observations upon them are deceptive. A fine vapour spray using a solution of zinc sulphate 1·5 to 2 per cent. seems sometimes to have a beneficial effect, and at any rate to be without risk. If any other form of medication is used for the nose it is probably safest to administer it in the form of a finely divided oily spray.

I am, Sir, yours faithfully,

J. ALISON GLOVER.

Netherhall-gardens, N.W., Feb. 24th, 1931.

To the Editor of THE LANCET.

SIR,—Your leading article emphasises the necessity for open air, the avoiding of crowded assemblies and excessive fatigue, the importance of increased cubic space, and the taking of precautions whilst coughing and sneezing in order to avoid the scattering of infectious droplets. One other very necessary precaution is that of washing the hands and face by means of pure running water from a single elevated nozzle, in the form either of spray, wave, or straight jet. The present wash and lavatory basins are insanitary, being bacteriologically unclean as no regular and correct sterilisation of the basin wall is attainable. The basins are just miniature baths and, when used with stationary water for the various everyday ablution purposes, favour direct naso-oral inoculation and a spread of infectious disease. I believe the abolition of the waste plug and the use of the elevated tap in wash-hand basins would lower the incidence of infectious diseases all over the country.

I am, Sir, yours faithfully,
LACHLAN GRANT.

Bacteriological Laboratory, Ballachulish, Argyleshire,
Feb. 23rd, 1931.

ACUTE TOXIC HEPATITIS AFTER ACRIFLAVINE.

To the Editor of THE LANCET.

SIR,—My attention has been drawn by Prof. C. H. Browning to an error which occurred in my letter on this subject published in THE LANCET of Jan. 24th. It was there stated that in the experiments of Meleney and Zan a single intravenous injection of 0·00025 g. per kilo body-weight killed a rabbit within six days. Actually the fatal dose was 100 times greater and the figure should read 0·025 g. I apologise for this error, but it in no way affects my main contention which was that acriflavine given by mouth may sometimes be followed by serious consequences in the human being.

I am, Sir, yours faithfully,
EDWARD R. CULLINAN.

Harley-street, W., Feb. 17th, 1931.

BARBITURATES AS BASAL HYPNOTICS.

To the Editor of THE LANCET.

SIR,—In a series of cases after the intravenous injection of nembutal I have encountered instances of restlessness, prolonged drowsiness, and slight vomiting. In no case has anxiety been aroused. As a preoperative sedative in nervous patients I have found nembutal valuable and easier to employ than avertin per rectum. In obstetrical practice it is preferable to sodium amytal given by the mouth, in my experience. I venture to inform you for, although my numbers are small as compared with those of Dr. Magill and Dr. Rowbotham, I have observed the cases from a different angle, that of the surgeon.

I am, Sir, yours faithfully,
JAMES RIDDELL,
Consulting Gynæcologist, Plymouth City Hospital.

Plymouth, Feb. 20th, 1931.

APPROACH TO THE GASSERIAN GANGLION.

To the Editor of THE LANCET.

SIR,—I was interested to read in your issue of Feb. 14th (p. 348) the account by Mr. C. P. G. Wakeley and Dr. W. O. Reid of the difficulty experienced in raising the dura mater from the middle fossa and of the trouble which arose from hæmorrhage in approaching the Gasserian ganglion. A few months ago I operated on a case of trigeminal neuralgia at the Hackney Hospital. In dealing with the dura mater and the middle meningeal artery I used a method which I understand is employed by Mr. Norman Dott. By pushing gently with pledgets of cotton-wool soaked in saline and held in a long pair of toothless dissecting forceps the dura was slowly but surely raised from the middle fossa. The amount of dura elevated by each stroke was almost negligible, but in 1[illegible] minutes the artery was exposed as far as its exit from the foramen spinosum. Having anticipated the direction of the foramen, a piece of sterilised match stalk half an inch long, brought to a point at one end, was pressed into the foramen, thus occluding the artery. From that moment all danger of hæmorrhage from this vessel had passed. The process of slowly raising the dura was continued until the Gasserian ganglion was reached and eventually divided.

I am convinced that the time occupied in raising the dura mater in this way is economically spent since hæmorrhage from the middle meningeal artery can assume alarming proportions, sufficient to cause the surgeon to abandon the operation—sometimes with a fatal result. In the case described by Mr. Wakeley, attention is drawn to the amount of fibrosis around the ganglion which he suggests may be due to previous alcoholic injections. The patient on whom I operated had received four alcoholic injections. The first from the lateral approach was unsuccessful, but the remainder from the anterior approach produced relief from pain for nine months, seven months, and three months respectively, the patient finally insisting upon operation, from which he made a successful recovery with a satisfactory end-result.

Despite the injections little evidence of fibrosis was met with except in the immediate neighbourhood of the ganglion, where a little difficulty was encountered before division could be completed.

I am, Sir, yours faithfully,
J. EWART SCHOFIELD, F.R.C.S. Eng.,
Assistant Surgeon, Great Western Hospital, Swindon.

Feb. 23rd, 1931.

PROPAGANDA AND MEDICINE.

To the Editor of THE LANCET.

SIR,—Sydenham is said to have declared that "the arrival of a good clown in a village is infinitely more valuable for the health of its inhabitants than the arrival of 20 donkeys laden with drugs."[1] Probably he would have said the same thing of 20 donkeys laden with leaflets. The modern villager, however, need not choose between his clown and his health instructor, for the offices of both are combined in his newspaper. And my justification for writing is that I play the unpopular part of "our medical correspondent."

The present enthusiasm for information about health and disease—so much deplored by Dr. Hutchison—is largely due to the press, but the appetite of news editors is getting jaded and they ask for little save sauces and strong meat. Speaking on publicity in public health at the Central Council for Health Education last November Lord Riddell is reported as saying that "a better method of securing editorial notice was to make some startling expression of opinion on a subject which would be taken up by reporters with avidity" (THE LANCET, 1930, ii., 1160). The truth is that a conscientious medical correspondent would spoil almost any "story" by his pleas for caution and confirmation, and it is very difficult for him to keep his job. Readers may say (like Dr. Johnson) that they wish it were actually impossible, but there are two sides to that.

Hygienic advances make tiresome reading unless they are written round a picturesque personage, and only the best newspapers like to publish judicial reviews of medical subjects. For the rest news editors are chiefly interested in novel methods of treatment—preferably Ruritanian and unorthodox. No one nowadays wants a medical correspondent who sends in poignant appeals to wash seven times in Jordan, and since it is difficult to keep on telling one or two million people how to keep healthy, or even give them universal truths about health, one is greatly tempted to write about disease instead. I agree with your leading article that this tendency should be resisted. My own object has always been to avoid giving specific information about conditions like cancer but warn people to go to their doctor *promptly* if they notice anything wrong. Now I am charged with fostering sickness and sending the national insurance scheme into bankruptcy. But I am unrepentant about my part in the Go Quicker to Your Doctor movement. There is something radically wrong with the national health insurance scheme if it cannot be bothered with early disease.

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[1] Quoted by Dr. Erwin Lick: The Doctor's Mission. London, John Murray, 1930.

I am, Sir, yours faithfully,

"OUR MEDICAL CORRESPONDENT."

Feb. 24th, 1931.

ADLER ON WOMAN'S GOAL.

To the Editor of THE LANCET.

SIR,—On page 430 of your last issue Dr. Graham Howe is reported as having declared that "in Adler's 'Individual Psychology' it is stated that woman's goal is to be a man." The report, in spite, if not in consequence, of Dr. Howe's further observations, seems likely to give rise to misapprehension. Adler finds the main motive in feminine neurosis to be what he calls the "masculine protest" of the woman against what *she* conceives to be the inferiority of the feminine rôle in general and her own hard case in particular. The female neurotic, at an early age, chooses her goal, and devises her life-style, so as to satisfy this masculine protest in the one of the thousand available ways that she finds most suitable and convenient to herself, she being what she then is. Adler himself, at all times and everywhere, firmly upholds the essential dignity and importance of the "feminine rôle," as properly understood and biologically sanctioned, and he insists that it is equal in social value, even though not functionally identical, with that of the male.

Individual Psychology, therefore, does not say that "woman's goal is to be a man," but that a woman's *neurosis* arises from a wrong self-valuation, an incorrect depreciation of her social function, and so, from her discontent at being a woman. The neurotic manifestations, whatsoever they may be, fulfil *their* allotted purpose of allaying this discontent, but always at the expense of a failure in that social and sexual coöperation which should be, and is, the "goal" of the healthy and adjusted woman, and in which, rather than in sterile self-assertion, woman's real importance to the social organism is found.

I am, Sir, yours faithfully,

Feb. 21st, 1931. INDIVIDUAL PSYCHOLOGIST.

OBITUARY

CYRIL OGLE, M.D. Oxf., F.R.C.P. Lond.

CONSULTING PHYSICIAN TO ST. GEORGE'S HOSPITAL.

WE regret to announce the death of Dr. Cyril Ogle which occurred on Saturday last, Feb. 21st, at Folkestone, in his seventieth year.

Cyril Ogle was the third son of Dr. John William Ogle for many years physician to St. George's Hospital, a well-known doctor and scholar and a personal friend of Gladstone and Cardinal Newman. Cyril Ogle was educated at Westminster School and Trinity College, Oxford, and, deciding to follow in his father's footsteps, entered at St. George's Hospital a little later than the ordinary run of students, and with a well-deserved reputation as a scholar. He qualified in 1888 and proceeded to the M.B., B.Ch. Oxford in 1890. In the following year he became M.R.C.P. and obtained the Fellowship in 1899, proceeding to the Oxford doctorate in 1906. After having filled the appointment of house physician at St. George's Hospital, he was successively medical registrar and curator of the museum, and was elected assistant physician in 1897. He did not have to wait long for a care of beds, for in 1905 he became full physician, by which time he had acquired in the hospital a high reputation not only for his discrimination in diagnosis and his resourcefulness in treatment, but for his ability to impart his knowledge to students. These qualities were soon recognised outside his own school, and he was appointed examiner in medicine and materia medica to the English Conjoint Board, and later additional examiner in medicine at the University of Cambridge. Soon after election to the Fellowship he became prominent in his quiet way at the Royal College of Physicians of London; he was for two periods on the examining board of the College —viz., from 1905 to 1909 and from 1911 to 1915, was on the Council for 1916 to 1918, when his services to the corporation were recognised by his appointment as Censor in 1924, a distinguished position which his father had filled 40 years previously.

During the war when, as occurred in all the hospitals, St. George's was depleted of its staff Ogle's assiduity in the wards was, if possible, accentuated. He came then to coöperate, often as their assistant, with men who had been his pupils, and his singularly retiring personality made him assume the position of junior with great plausibility. Considering his varied scholarly attainments and practical proficiency and long experience, he wrote very little, a few contributions to the proceedings of the Royal Society of Medicine, some clinical papers in THE LANCET, and chapters on diseases of the pericardium and mediastinal growths in the system of treatment compiled by Latham and English forming his most notable writings.

We have received the following appreciation from one of his colleagues: "The death of Cyril Ogle removes from the ranks of the profession a figure of outstanding clinical ability. Of a singularly modest and retiring nature, he was not so well known to members of the medical profession outside the circle of St. George's Hospital and its students as his qualities warranted. To have been Ogle's clinical clerk or house physician was a liberal education in matters of detail: he was marvellously rapid and in many instances appeared to have an intuitive perception of the essential malady in a particular patient which seemed to be miraculous to the attendant students. Like others he made mistakes, but he made fewer mistakes than most. He was probably one of the most industrious hospital officers who ever lived. He visited St. George's every weekday, and often on Sundays in addition. He was always willing and anxious to help others in a difficulty by consulting with them; and he was a regular attendant in the post-mortem room.

"His father, Dr. John Ogle, was a distinguished connexion with public mental hospitals.—Mr. Greenwood replied: In some areas the local authority has provided a central laboratory for the several hospitals belonging to it. It is hoped, without prejudice to the principle of each hospital having a laboratory of its own, that such centralisation may be developed elsewhere, particularly where the laboratory service can be based on the medical school of a university. But it is not intended to attempt to set up a single central unit for this purpose.

Superannuation for Asylum Workers.

Mr. Hopkin asked the Minister of Health if he could make a statement concerning the proposed new legislation for superannuation for asylum workers.—Mr. Greenwood replied: The actuarial investigation of this matter is still in progress.

Water-supply in Lincolnshire.

Mr. Shepherd asked the Minister of Health whether he was aware that the water-supply in certain districts in the Holbeach (Lincs.) area had been condemned as unfit for human consumption; and what steps, if any, were being taken about it.—Mr. Greenwood replied: I am aware of the unsatisfactory condition of the water-supply in this area. A joint scheme for a new supply is proposed by four neighbouring councils, including Holbeach, and a Provisional Order for constituting the joint authority is about to be made and will be submitted to Parliament.

Fibrosis of the Lungs.

Mr. Morley asked the Home Secretary what progress had been made towards scheduling fibrosis of the lungs as a disease ranking for compensation under the Workmen's Compensation Acts.—Mr. Clynes replied: As my hon. friend is aware, the effects on the lungs of various dusts, including coal dust, are being investigated by an expert committee of the Medical Research Council. This committee is pursuing various lines of research, but the problems are exceedingly complicated, and I regret that—as I am advised—a considerable period must elapse before any definite conclusions can be reached.

New Silicosis Regulations.

Mr. Hopkin asked the Home Secretary if the new regulations concerning silicosis (various) were now in force.—Mr. Clynes replied: If, as I assume, my hon. friend is referring to the Various Industries (Silicosis) Amendment Scheme, 1930, which amended the definition of "silica rock," that scheme came into force on Feb. 1st.

Cerebro-spinal Fever.

Lieut.-Colonel Heneage asked the Minister of Health what action he was taking in regard to recent outbreaks of cerebro-spinal fever.—Mr. Greenwood replied: The action taken by my department includes the close observation of reported cases of this disease, and the giving of advice, on request, to local authorities and medical officers of health on the isolation of patients and any practicable preventive measures. If necessary, visits are paid by medical officers of the department to the districts affected. The type of the prevalent organism is studied in the laboratory by the pathologists of the department, who work in coöperation with the pathologists of the Army, Navy, and Air Force. I have under consideration the question of publishing a general statement relating to the occurrence of this disease.

Mr. Ormsby-Gore: Do I gather that the statement will include a report from the Medical Research Council on the relationship of this disease to influenza?

Mr. Greenwood: What I am concerned about is the present position. We shall consult them, but it will not be their statement; it will be mine.

Lieut.-Colonel Heneage asked the Minister of Health if he was causing investigations to be made as to whether recent outbreaks of cerebro-spinal fever were due to overcrowding.—Mr. Greenwood replied: I am advised that it is well established that overcrowding of persons in barracks, schools, and other residential institutions favours the spread of meningococcus infection. The existence of overcrowding in such circumstances would be investigated in any district affected, but I am informed that no notable example of such overcrowding has been discovered during the present prevalence of this disease.

Mr. Hacking asked the Minister of Health, in view of the recent increase in the total number of cases of spotted fever in the country, whether he was satisfied with the precautions being taken to prevent this disease from spreading.—Mr. Greenwood replied: I am advised that an increase in the number of cases of cerebro-spinal fever, or spotted fever, is usual in the early months of the year—especially when influenza is prevalent. There is every reason to believe that the local authorities and their medical officers of health are alive to the importance of giving such precautions as are practicable to prevent the spread of this disease.

Sir Herbert Cayzer asked the First Lord of the Admiralty in view of the occurrence of a further case of spotted fever at Eastney Barracks, Portsmouth, what steps were being taken to prevent the spread of the disease.—Mr. G. H. Hall (Civil Lord of Admiralty) replied: Only one case of spotted fever has occurred at Eastney Barracks. The following steps have been taken to prevent spread of the disease: (1) No outside residents are permitted to attend any divisional entertainment. (2) The Divisional Church will be closed except to persons residing within the confines of Eastney Barracks. (3) No football, hockey, or shooting matches will take place, either at home or away.

Asbestosis.

Mr. Muggeridge asked the Home Secretary whether his attention had been drawn to an inquest held at Ilford on Feb. 11th at which a woman who had been employed for 15 years in an asbestos factory at Barking was stated to have died from heart failure following bronchial pneumonia, accelerated by asbestosis, and whether he could say, in view of the number of deaths in this factory, when the employees would be brought within the provisions of the Silicosis and Asbestosis Act, passed last session.—Mr. Clynes replied: I have had a report on this case from the senior medical inspector of factories, who attended the inquest. A draft scheme of compensation for this disease was issued last month together with a draft of the proposed medical scheme by which a medical board will be set up to deal with all cases of silicosis and asbestosis throughout the country. These draft schemes are now under consideration by the various employers' and workers' associations affected; and as soon as I am in possession of their views I intend at once to review the position. I am much impressed with the urgency of this question, and while it is not yet possible to fit a definite date, I am hoping to reach a final settlement by the end of next month.

Mr. Muggeridge: Is the right hon. gentleman aware that on the Friday following the inquest the death of another woman was inquired into and the verdict was that death was due to asbestosis caused by inhaling asbestos dust which had remained in her system?

Mr. Clynes: I have no information on the second case, but it illustrates the need for prompt action.

MONDAY, FEB. 23RD.

Boots for Necessitous School-children.

Mr. Sandham asked the President of the Board of Education if he had considered the resolution passed by the Jarrow education authority asking that legislation to provide boots for necessitous school-children be introduced on the lines of the Children (Provision of Footwear) Bill, 1928; and whether, in view of the worsened condition of the children to-day, he intended to introduce such legislation.—Mr. Morgan Jones (Parliamentary Secretary to the Board of Education) replied: A Bill dealing with this subject, introduced by a private member, is already before the House.

Hospitals and Barracks in India.

Earl Winterton asked the Secretary for India whether the progress made in past years in improving the accommodation and amenities of British and Indian military hospitals, and of electrification in barracks in India was being maintained.—Mr. Wedgwood Benn replied: Yes, Sir. The original programme for improving hospitals and electrifying British barracks is on the point of completion, and steady progress is being made with the improvement of Indian troops lines.

Influenza and Health Insurance Benefit.

Mr. Rhys Davies asked the Minister of Health whether he could give any information on the effects of the present influenza epidemic on the amounts claimed by approved societies from headquarters to meet claims for benefit, and, if so, would he show in tabular form comparisons with the corresponding month of January for each of the last five years.—Mr. Greenwood replied: No precise information is available in regard to the effects of the influenza epidemic on the applications for funds to meet claims for benefit. The applications in January do not show any considerable variation in amount, but further applications which are now being received indicate a serious increase in the claims for benefit during the last three weeks that may be due to influenza.

Air Force Recruits and Cerebro-spinal Fever.

Mr. Groves asked the Under Secretary for Air whether the recruits in the Royal Air Force stationed at Uxbridge who recently contracted cerebro-spinal fever had been vaccinated or inoculated; if so, how many, and what were he dates on which those operations were performed; and how many cases had occurred and how many proved fatal.—Mr. MONTAGUE replied: Twelve cases of cerebro-spinal fever, of which six proved fatal, have recently occurred among Royal Air Force personnel stationed at Uxbridge. Eleven of the 12 men concerned had been vaccinated, but one had been inoculated. The dates of vaccination range from Sept. 20th, 1930, to Jan. 20th, 1931.

TUESDAY, FEB. 24TH.

Health Conditions in Barracks.

Lieut.-Colonel HENEAGE asked the Secretary for War how many barracks in the Aldershot Command were now condemned; and what was the minimum cubic feet allowance per man.—Mr. T. SHAW replied: There are no barracks in the Aldershot Command which have been condemned. The minimum cubic space allowed for British troops at home stations is 600 cubic feet a man.

Cerebro-spinal Fever in the Army.

Lieut.-Colonel HENEAGE asked the Secretary for War what steps were being taken to combat the outbreak of cerebro-spinal fever in the Army.—Mr. T. SHAW replied: The usual precautions have been taken throughout the Army with regard to ventilation and prevention of overcrowding. Carriers are being searched for and immediate and remote contacts are being watched. In Aldershot, where rather special conditions obtain, special orders have been issued reducing indoor gatherings to a minimum. I am acting in concert with the civil authorities. As regards the investigations as to the cause of the disease the type of prevalent organism is studied in the laboratory by the Army pathologists, who work in coöperation with the pathologists of the Navy, Air Force, and Ministry of Health.

Lieut.-Colonel HENEAGE asked the Secretary for War if his attention had been called to the fact that the average percentage of cerebro-spinal fever was higher in the Army than in the civil population; and if the question of the type of barrack room was being investigated in this connexion.—Mr. SHAW replied: In the case of England and Wales, as shown in the answer given on Nov. 17th last, the published figures for the civil population show a smaller ratio per 1000 for this disease than is shown for the troops. As regards Scotland, the reverse is the case. But I am not sure that the figures are on a strictly comparable basis, and for Scotland, so far as the civil population is concerned, they only apply to two counties and certain large towns. As regards the last part of the question, I am advised that the incidence of the disease is so spread that there are no grounds for connecting it with any particular type of barrack room.

MEDICAL NEWS

University of Cambridge.

On Feb. 20th the following degrees were conferred:—

M.B. & B.Chir.—G. L. Robinson, J. H. Hopper, T. C. J. Evans, and W. V. Boyle.

M.B.—E. T. O. Slater and H. D. B. Kelly.

B.Chir.—M. S. M. Fordham and G. N. Grose.

University of London.

The Senate will shortly consider applications for grants from the Dixon fund for assisting scientific investigations and from the Thomas Smythe Hughes and Beaverbrook medical research funds. The Rogers prize for 1931, valued at £100, is offered for an essay on Filtrable Viruses as a Cause of Disease in Man, and the competition is open to all registered medical practitioners. The essay must be received before April 30th. Further particulars of the grants and prize may be had from the Academic Registrar.

University of Bristol.

The dissertation submitted by Mr. A. E. Hayward Pinch for the degree of Doctor of Medicine has been approved.

Society of Chemical Industry.

At a meeting of the London section of this Society at P.M. next Monday at Burlington House, Piccadilly, W., a paper on the chemotherapy of antimony will be communicated by Mr. W. H. Gray, Dr. J. W. Trevan and Miss I. W. Bainbridge of the Wellcome Chemical Research Laboratories.

London School of Hygiene and Tropical Medicine.

The next series of lectures and demonstrations for men and women outside the medical profession proceeding to the tropics will be given by Lt.-Col. G. E. F. Stammers, from March 18th to 27th from 5 to 6.30 P.M. Particulars may be had from the Secretary of the school, Keppel-street, Gower-street, W.C.1.

Hunterian Society: Annual Dinner.

The dinner to commemorate the 203rd anniversary of John Hunter was held at the May Fair Hotel on Feb. 19th. Prof. A. W. Sheen presided and between 200 and 300 members and guests were present. After the loyal toasts, the memory of John Hunter was drunk in silence and the President then called upon Sir Basil Blackett to propose the Hunterian Society. John Hunter, he said, lived an adventurous life and men like him were needed to-day. His was not a habit of mind that did things because they had been done from time immemorial, or refrained from doing things because "they aren't done, my dear." This kind of adventurous spirit was urgently needed to-day. It was reckless to retain machinery which was not applicable to modern conditions; if it was not found to work, it should be superseded by some other machine which did work. For example, the Public Health Service of the country should not have to depend for its efficiency on the vagaries of rural district councils. It should be reorganised on a basis applicable to the whole country.

The President referred to the prosperity of the Society and stated that for the first time they had sought a president outside London. He commented on the scanty consideration given by biographers of John Hunter to the personality of Mrs. Hunter, who had been a woman of unusual culture. She must have been sorely tried by the social behaviour of her husband, who not only spent much time experimenting with strange animals, but was intolerant of the presence of guests in his house.

Dr. A. Westerman proposed the Lord Mayor and the Corporation of the City of London. He had himself lived in the City for 25 years, but was but a youthful member of the Society in comparison with his friend, neighbour, and rival, Mr. John Adams, who had practised there for 60 years. The Hunterian Society was proud of its connexion with the City, and the presence at this dinner of the Lord Mayor and Corporation showed that the City was also proud of its Hunterian Society. The Lord Mayor (Sir William Phené Neal) in response, dwelt on the close association of the City with its hospitals, notably the Royal Hospital of St. Bartholomew. If he, himself, were suddenly taken ill, he hoped that he would be fortunate enough to be admitted to that hospital, and he trusted that its appeal to the public would meet with success. On behalf of the City, he cordially reciprocated the friendship of the Society.

Sir Arthur Keith, in proposing the guests and kindred societies, congratulated Sir Basil Blackett on his perception of Hunter's quality, and the President on his acute sense of the atmosphere of Hunter's household. Hunter, this "uncouth little beggar with red hair," had married one of the finest women in England, who received all the musicians, artists, and literary men of the day. There was some resemblance between their married life and that of the Carlyles, and it was, in some ways, unfortunate that Mrs. Hunter, unlike Jane Carlyle, did not leave a record of what she thought of her husband. There was present in the room, Sir Arthur continued, one who had done more to honour Hunter than any other man, Mr. George Buckston Browne. In his gift of an institute for experimental surgery, he had laid the foundation of another experimental farm comparable to that kept at Earl's Court by John Hunter.

In the unavoidable absence of Mr. Norman Birkett, Lord Moynihan responded to this toast. He supported everything that Sir Arthur Keith had said about Mr. Buckston Browne's gift. This new monument to John Hunter would be a living one. The museum at the Royal College of Surgeons was indeed a fine memorial, and the industry and capacity of its present conservator, Sir Arthur Keith, had greatly increased its value, but it was incomplete. Mr. Buckston Browne, by giving the land and the means to create a research institute of biology connected with surgery, had really completed the memorial to John Hunter. The gift of Mr. Buckston Browne would transfuse new blood into surgery from an outside source. The College of Surgeons would, in the future, consist not only of an examining body, a fine museum and a good library, but would also provide facilities for research. Mr. Buckston Browne would be acclaimed for all time as one of the illustrious figures in the great procession of those who had advanced surgery.

Lieut.-Col. C. T. Samman also replied, thanking not only for the courteous speech in which the health of the guests had been proposed, but also for the good food and drink which had been provided. It was the salt of friendship for the living which made the success of such a banquet.

Medical Society of London.

The 158th annual dinner of this society will be held at the Trocadero Restaurant, Shaftesbury-avenue, W., next Friday, March 6th, with Dr. R. A. Young, the President, in the chair.

Society for the Study of Inebriety.

On Tuesday, March 10th, at 8.30 P.M., at 11, Chandos-street, London, W., this Society is holding a joint session with the Section of Psychiatry of the Royal Society of Medicine to discuss the Prevention and Treatment of Drug Addiction. The principal speakers will be Dr. William Brown, Dr. Macdonald Critchley, Dr. Edward Mapother, and Dr. F. G. Laughton Scott.

Wellcome Foundation.

The Wellcome Foundation Ltd. is about to erect a new medical and chemical research building at the corner of Gordon-street and Euston-road on the large site now partly occupied by their Bureau of Scientific Research. For many years the Foundation has maintained medical and chemical research laboratories, but recent developments have made it necessary to coördinate and extend these activities. The architect is Mr. Septimus Warwick, F.R.I.B.A.

Fellowship of Medicine and Post-Graduate Medical Association.

Arrangements for the coming week will be found in our Medical Diary. Two special courses, of a month each, begin on March 2nd: at the West End Hospital for Nervous Diseases, Welbeck-street, daily at 5 P.M., with a minimum entry of ten, and at the St. John's Hospital, Leicester-square, every afternoon with clinical instruction and two lectures weekly. A course of eight lecture-demonstrations will be given at the Bethlem Royal Hospital, Eden Park, Beckenham, on Tuesdays and Saturdays at 11 A.M. from March 3rd. Two other special courses will be given from March 9th–28th: in medicine, surgery, and gynæcology at the Royal Waterloo Hospital, and in orthopædics at the Royal National Orthopædic Hospital (minimum entry required or course will be cancelled). Copies of all syllabuses are obtainable from the Fellowship at 1, Wimpole-street, London, W.1.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, March 3rd.—8 P.M., PATHOLOGY. Laboratory Meeting at Charing Cross Hospital, London, W.C. Demonstrations: R. A. Hickling: The Supra-vital Method of Studying Cells. H. W. C. Vines (Museum demonstration): Recent Specimens of Interest (with sections). Specimens Prepared for Teaching Purposes: (*a*) Bulk Staining. (*b*) Grouped Post-mortem Lesions. Communications: A. B. Rosher: A New Method of Determining the Pathogenicity of Influenza Bacilli. The Pathogenicity of Indol Producing Strains of Influenza Bacilli. Jocelyn Patterson: The Preparation and Standardisation of the Lange Gold Sol. Some Observations on the Mechanism of the Lange Reaction. J. Adler: The Action of Histamine on Gastric Secretion after Partial Gastrectomy. 5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Cases: Mr. W. Rowley Bristow: Osteo-chondroma of the Pelvis. Mr. B. H. Burns: Osteo-chondritis Juvenilis of the Lower Ulnar Epiphysis. Mr. Eric I. Lloyd: Obstetrical Palsy. Mr. H. J. Seddon: Atlanto-axial Dislocation: A New Method of Reduction. Mr. P. Bernard Roth: Backache due to Old Fracture of a Transverse Process of the First Lumbar Vertebra. Extreme Talipes Equinus due to Untreated Fracture of the Astragalus. Other cases will be shown by Mr. D. McCrae Aitken, Mr. E. P. Brockman, and others.

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Discussion: The History of Oto-laryngology. Openers: Sir StClair Thomson: The Historical Evolution of Oto-laryngology. Mr. Lionel Colledge: The Laryngeal Disease of the Emperor Frederick. LARYNGOLOGY and OTOLOGY. Members of these Sections are specially invited to attend the meeting and take part in the discussion. 8.30 P.M., SURGERY. Short Papers: Mr. Duncan C. L. Fitzwilliams: Fat Necrosis. Mr. A. Dickson Wright: The Small Incision for Perforation of Peptic and Typhoid Ulcers. Mr. A. E. Porritt: The Injection Treatment of Hydrocele, Varicocele, Bursitis, and Nævi. Mr. J. Paterson Ross: The Anatomy of the Spinothalmic Tract in Relation to Chordotomy. Mr. J. P. Hosford: Prognosis in Fractures of the Carpal Scaphoid. Mr. R. H. Boggon: Removal of the Stellate Ganglion in Raynaud's Disease.

THURSDAY.—8 P.M., TROPICAL DISEASES AND PARASITOLOGY. Paper: Major P. Granville Edge: The Uses and Scope of Vital Records in the Tropics. EPIDEMIOLOGY AND STATE MEDICINE. Members of this Section are specially invited to attend this meeting.

FRIDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Discussion: Effects on Hearing after Fractured Base of the Skull: Lessons Resulting Therefrom. Opening Paper: Mr. E. D. D. Davis. Cases and specimens will be shown. 5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) Cases and specimens will be shown by Sir James Dundas-Grant, Mr. Lionel Colledge, Mr. V. E. Negus, Mr. Alex. R. Tweedie, Mr. A. J. Wright, and others.

SATURDAY.—ANÆSTHETICS. (Provincial Meeting at Bristol.) 11.15 A.M. train leave Paddington (G.W.R.). 2 P.M. Meeting at Bristol University, which will take the form of a symposium on the Barbiturates in Anæsthesia by Dr. M. Nierenstein, Biochemist; Mr. A. L. Taylor, Pharmaceutist; Prof. R. J. Brocklehurst, Physiologist; Mr. A. L. Flemming, Mr: S. V. Stock, Dr. H. W. Featherstone, and Dr. I. W. Magill, Anæsthetists; followed by a discussion.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

WEDNESDAY, March 4th.—9 P.M., Dr. J. W. McNee: The Spleen. (Last Lettsomian Lecture.)

HUNTERIAN SOCIETY.

MONDAY, March 2nd.—9 P.M. (at Apothecaries' Hall, Water-lane), Mr. A. E. Mortimer Woolf: Surgical Aspects of Diverticulitis (Hunterian Oration).

INTERNATIONAL SOCIETY FOR INDIVIDUAL PSYCHOLOGY, 55, Gower-street, W.C.

FRIDAY, March 6th.—Dr. F. G. Crookshank: Individual Psychology and Ill-health.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, March 6th.—8.30 P.M. (at West London Hospital). Clinical Meeting. (Cases 8 P.M.)

MANCHESTER MEDICAL SOCIETY AND LIVERPOOL MEDICAL INSTITUTION.

THURSDAY, March 5th.—5 P.M. (at Liverpool), Mr. Geoffrey Jefferson: Surgery of Pituitary Body. Dr. H. T. Ashby: Treatment of Pulmonary Tuberculosis in Children by Sanocrysin. Mr. J. B. Macalpine: Some Points in the Diagnosis of Ureteric Stone.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY, March 4th.—8 P.M., Sir Gerald Bellhouse: Safety in Factories.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

FRIDAY, March 6th.—5 P.M., Sir Arthur Keith: The Nerve-supply of the Alimentary Tract and the Nature of Auerbach's Plexus.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, March 3rd.—5 P.M., Surg.-Captain S. F. Dudley, R.N.: Some Lessons in the Distribution of Infectious Disease in the Royal Navy. (Second Milroy Lecture.)

THURSDAY.—5 P.M., Surg.-Captain Dudley: (Last Milroy Lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 2nd, to SATURDAY, March 7th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square: Mon., at 4 P.M., free lecture by Dr. A. J. Whiting on Early Diagnosis of Pulmonary Tuberculosis.—CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E.—Wed., Free demonstration in the Wards by Dr. Goodman Levy at 2 P.M.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. Thurs., Free demonstration of General Surgery by Mr. Herbert J. Paterson at 2 P.M.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Special course in Neurology. Daily at 5 P.M., Clinical demonstrations in Out-patient Department.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Special Course in Dermatology. Every afternoon.—BETHLEM ROYAL HOSPITAL, Monks Orchard, Eden Park, Beckenham. Thursday and Saturday, Special Course in Psychological Medicine at 11 A.M.

ROYAL INSTITUTION, Albemarle-street, W.

THURSDAY, March 5th.—5.15 P.M., Prof. J. B. S. Haldane: Respiration.

SATURDAY.—3 P.M., Lord Rutherford: Alpha Rays.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, March 2nd.—12 noon, Dr. Greenfield: Acute Virus Diseases of Central Nervous System. 2 P.M., Dr. Riddoch: Out-Patient Clinic. 3.30 P.M., Dr. Hinds Howell: Disturbances of Sensation (subjective).

TUESDAY.—2 P.M., Dr. Walshe: Out-Patient Clinic. 3.30 P.M., Mr. Armour: The Relief of Pain by Surgical Measures.

WEDNESDAY.—2 P.M., Dr. Martin: Out-Patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-Patient Clinic. 3.30 P.M., Dr. Riddoch: Common Lesions of Peripheral Nerves.

FRIDAY.—2 P.M., Dr. Adie: Out-Patient Clinic. 3.30 P.M., Sir Percy Sargent: Surgery of the Autonomic System.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, March 5th.—9 P.M., Mr. A. C. Palmer: Pelvic Tumours.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Agar-street, W.C.

SUNDAY, March 1st.—10.30 A.M., Mr. J. Bright Banister: Indications for Surgery in Obstetrics. 11.45 A.M., Dr. David Forsyth: Diagnosis of Neurotic Conditions in General Practice.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL, University-street, W.C.

TUESDAY, March 3rd.—5.15 P.M., Dr. C. H. Andrewes: Immunity in Virus Diseases.

WEDNESDAY, March 4th.—4.15 P.M. (in the Large Lecture Theatre, No. 1), Dr. Charles Singer: The Oldest Medical Work—the Newly Discovered Edwin Smith Papyrus.

NORTH-EAST LONDON POST-GRADUATE COLLEGE Prince of Wales's General Hospital, Tottenham, N.

MONDAY, March 2nd.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

WEDNESDAY, March 4th.—4 P.M., Dr. H. C. Gage: Some Recent Advances in Radiology.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 6th.—4 P.M., Mr. H. Kisch: Use of Radium in Cancer of Throat, Nose, and Ear.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, March 3rd.—3.15 P.M. (at the Royal Chest Hospital), Dr. Barty King: Demonstration of Cases.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

THURSDAY, March 5th.—4 P.M., Dr. H. C. Cameron: Demonstration of Children's Ailments.

CITY OF LONDON MATERNITY HOSPITAL City-road, E.C.

THURSDAY, March 5th.—5 P.M., Dr. H. C. Lucey: The Cause of Fœtal Death.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, March 3rd.—5 P.M., Dr. W. Griffith: Eczema (1).

THURSDAY.—5 P.M., Dr. W. Griffith: Eczema (2).

BRITISH CANCER CAMPAIGN: YORKSHIRE COUNCIL.

THURSDAY, March 5th.—3.30 P.M. (in the Royal Infirmary, Huddersfield), Mr. W. Ernest Miles: The Symptomatology and Treatment of Cancer of the Rectum.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

THURSDAY, March 5th.—5.15 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. W. A. Potts: The Psychology of Punishment.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, March 3rd.—4.15 P.M., Mr. W. H. Hey: Cancer of the Breast.

FRIDAY.—4.15 P.M., Mr. E. D. Telford: Demonstration of Surgical Cases.

ST. MARY'S HOSPITALS, Manchester.

FRIDAY, March 6th.—4.15 P.M. (at the Whitworth-street West Hospital), Mr Morley: Demonstration of Surgical Cases in Children.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, Elizabeth-street.

WEDNESDAY, March 4th.—4.30 P.M., Dr. H. R. Clarke: Diagnosis of Early Pulmonary Tuberculosis.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.

FRIDAY, March 6th.—3.30 P.M., Prof. Hall: Cardiac Pain

ANCOATS HOSPITAL, Manchester.

THURSDAY, March 5th.—11 A.M., Mr. E. E. Hughes: Clinical Demonstration. 4.15 P.M., Mr. F. H. Diggle: Head Noises—Ætiology, Prevention, and Treatment.

Vacancies

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.

All Saints' Hospital for Genito-Urinary Diseases, 91, Finchley-road.—H.S. £150.

Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.

Ayr County Hospital.—Two H.S.'s. Each £150.

Belfast, Royal Victoria Hospital.—Med. Supt. £500.

Birmingham City Babies' Hospital, Canwell Hall.—Jun. Res. M.O.'s. At rate of £100.

Birmingham, Selly Oak Hospital.—Radiographer. £250.

Bootle General Hospital.—Sen. Res. M.O. Also Two Jun. H.S.'s. At rate of £200 and £150 respectively.

Cambridge, Addenbrooke's Hospital.—H.S. to Special Depts. At rate of £130.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Cardiff Isolation Hospital.—Res. Asst. M.O. £150.

Cardiff Royal Infirmary.—H.S. to Surgical Unit. At rate of £50. Also Ophthalmic H.S. At rate of £75.

Central London Throat, Nose, and Ear Hosital, Gray's Inn-road, W.C.—Hon. Assts. for Out-patient Dept.

Charing Cross Hospital, W.C.—Two Surgical Registrars. Each £150. Also Registrar to Nose, Throat, and Ear Dept. £100.

Coventry and Warwickshire Hospital.—Res. H.S. £125.

Dorchester, Dorset Mental Hospital, Herrison.—Jun. Asst. M.O. £150.

Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.

East Ham Memorial Hospital, Shrewsbury-road, E.—H.S. and Cas. O. At rate of £120. H.P. At rate of £150. Also Hon. Ophthal. Surgeon.

Exeter, Princess Elizabeth Orthopædic Hospital.—Orthopædic Surgeon. £600.

Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Herefordshire General Hospital.—H.S. At rate of £150.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—H.P. At rate of £150.

Ilford, King George Hospital.—H.S. At rate of £100.

Infants Hospital, Vincent-square, Westminster, S.W.—H.P. At rate of £75.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. and H.P. Each at rate of £120.

Isleworth.—District M.O. £140. Also Public Vaccinator.

Kensington, Fulham and Chelsea General Hospital.—Physician. Also Dermatologist.

Leicester City Mental Hospital, Humberstone.—Second Asst. Res. M.O. £450.

Leicester Royal Infirmary.—H.S. and Cas. O. Also Second H.P. Each £125.

Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.

Liverpool Eye and Ear Hospital, Myrtle-street.—Ophth. H.S. £100.

L.C.C.—Divisional M.O. for Public Health Dept. £800.

London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.

London Hospital, E.—Asst. Obstet. and Gyn. Surgeon.

Manchester, Ancoats Hospital.—Res. M.O. At rate of £150. Also Two H.S.'s. Each at rate of £100.

Manchester and District Radium Institute, Nelson-street.—Director for Radium Institute.

Manchester Babies Hospital, Burnage-lane, Levenshulme.—Jun. Res. M.O. At rate of £50.

Manchester Royal Children's Hospital, Pendlebury.—Res. M.O. and Res. Surg. O. Each at rate of £125. Also Two Asst. M.O.'s for Out-patients' Department, Gartside-street. Each at rate of £150.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Miller General Hospital, Greenwich-road, S.E.—Cas. O. At rate of £150. H.P. and H.S. Each at rate of £125. Also Anæsthetist. 52 *gns.*

National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Hon. Officer for Speech Defects.

Newark General Hospital.—Res. H.S. £175.

Newcastle-upon-Tyne Hospital for Sick Children.—H.P. Also Sen. and Jun. H.P. All at rate of £100.

Newport, Monmouthshire County Council.—Asst. M.O. £500.

Northampton General Hospital.—H.S. Also Two Asst. H.S.'s. All at rate of £150.

Nottingham, City Mental Hospital.—Deputy Med. Supt. £650.

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.

Portsmouth Royal Hospital.—Second H.S. Also Cas. O. At rate of £130 and £100 respectively.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington, W.—H.P. At rate of £100.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Registrar. Also Asst. Physician.

Queen's Hospital for Children, Hackney-road, E.—Second Surgeon for Ear, Nose, and Throat Dept.

Reigate, Borough of.—M.O.H. School M.O. and M.O.H. of Infant Welfare Centre. £800.

Royal Free Hospital, Gray's Inn-road, W.C.—Clin. Asst. for Ophthal. Department. Also First Asst. for Children's Department. £100.

Royal London Ophthalmic Hospital, City-road, E.C.—Gifford Edmonds Prize in Ophthalmology. £100.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. At rate of £150. Also H.S. for Country Branch, Brockley Hill, Stanmore. At rate of £150.

St. Bartholomew's Hospital, E.C.—Asst. Surgeon.

St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Sen. and Jun. Hon. Med. Registrars.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—H.S. At rate of £75.

Salford Royal Hospital.—Three H.S.'s to Special Departments. Also Cas. H.S. All at rate of £125.

Salisbury, General Infirmary.—Hon. Asst. Surgeon. Also Asst M.O. to Venereal Diseases Department.

Sheffield City Hospitals, Infectious Diseases.—Res. M.O. £350

Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Res. Anæsthetist. £80–£100.

Society of Apothecaries of London, Water-lane, Queen Victoria-street, E.C.—Four Examinerships.

Southampton Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £100.

Swansea General and Eye Hospital.—Cas. O. £200.

Wallasey Victoria Central Hospital.—Jun. H.S. At rate of £100.

West Bromwich and District General Hospital.—Cas. H.S. At rate of £200.

West London Hospital, Hammersmith-road, W.—H.P., Two H.S.'s, and One Res. Anæsthetist. All at rate of £100.

Westminster Hospital, Broad Sanctuary, S.W.—Surg. Reg. £150. Also Asst. H.P. At rate of £52.

Weston-super-Mare General Hospital.—Res. H.S. At rate of £150.

Wolverhampton, Royal Hospital.—H.S. for Ear, Nose, and Throat Dept. At rate of £100.

Woodside Nerve Hospital, Woodside-avenue, Muswell Hill, N.—Res. H.P. £100.

Worcester General Infirmary.—Hon. Gynæcologist.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Sutton (Surrey), and at Twickenham (Middlesex).

NOTES, COMMENTS, AND ABSTRACTS

POISONS AND PHARMACY REFORM.

THE LAW AS TO THE DISPENSING OF MEDICINES.

THE provisions of the Poisons and Pharmacy Bill, which was read a first time in the House of Lords on Dec. 17th, 1930, have been analysed and explained in a previous article,[1] but as the Bill is expected to be put down for a second reading at an early date, this is an appropriate time to refer again to the question of pharmaceutical legislation. Since the publication of the Bill drafted by the Departmental Committee,[2] chemists' associations throughout the country have been discussing its terms, and as a result of their deliberations, which have been carefully noted by the Council of the Pharmaceutical Society, the Council has decided to make an endeavour to improve the Bill and has, we understand, drafted a number of proposed amendments in furtherance of this object. They are of such a character that, if the amendments or the principles upon which they are based were embodied in an enactment, the law relating to the practice of pharmacy would be changed fundamentally.

Present Deficiencies.

Admittedly, the existing pharmacy and poison law is deficient in several respects and alterations are desirable, but it would be remarkable if time could be found during the life of the present Parliament to place on the Statute Book another Act to regulate the business of the chemist and druggist and the sale of poisons. The public is not specially interested in the proposed changes; the popular newspapers are almost silent on the subject, and the man in the street is unconscious of the fact that a Bill to amend the law governing the sale of poisons has even been contemplated. It may, indeed, be doubted if Parliament is at the present time in the proper mood to deal conscientiously with legislation of a technical type. Notwithstanding all this, there can be no doubt that the law respecting the practice of pharmacy needs an overhauling and if, by chance, it is possible to spatchcock minor reforms in between great national measures an amendment of the Pharmacy Acts, provided it is well considered, is one of the matters to which Parliament might, with advantage, devote such spare time as may be available. A nation with an Empire on which the sun never sets has by the very nature of its scattered obligations less time to devote to domestic affairs than has one whose responsibilities are confined within narrower margins; so it comes about that in nearly all civilised nations the practice of pharmacy is regulated better than it is in Great Britain. English law is based on the supposition that so long as the sale of certain substances, legally defined as poisons, is restricted to trained and registered chemists, the safety of the public is well assured. Even this is putting it rather high, for while the law requires that certain poisons may only be sold in small quantities by registered chemists, some of these poisons may be distributed by any trader with sufficient nous to persuade a local authority to grant him a licence to traffic in noxious substances by the tin or barrel. Hence, several quite recent murder mysteries for which Scotland Yard is blamed because they have not brought the poisoners to justice, to say nothing of the fatal cases which are caused by the unintentional administration of poisons too easily procured.

The Position of the Pharmacist.

The introduction of the Bill into Parliament has had an effect upon the pharmaceutical body analogous to that produced by the injection of an antigen into living blood. Here comes the enemy, it says in effect, let us carry the campaign into his camp; let us not merely defend ourselves, but wage war with the object of getting something we never had before. And although a final decision must be reserved until the amendments are on the papers, we think the attitude of the chemists is proper. Here is a measure to amend the poison and pharmacy law, which as introduced in the House of Lords makes no attempt to protect the public, and incidentally, medical practitioners, from certain irregular practices. As things are at present, a prescription, provided none of its ingredients is a scheduled poison, may be dispensed by anyone. But, say the chemists, there are many potent substances which are not scheduled poisons; every medical prescription should be dispensed by trained, examined, and registered pharmacists, allowing of course to medical practitioners their existing rights. There is nothing at all illogical in a proposal which would bring pharmaceutical practice in this country into line, in this respect, with that of most other civilised nations. It is conceivable that considerable harm might be done if a dispenser substituted (say) ipecacuanha wine for tincture of cardamoms, or potassium bromide for carbonate of soda, or dispensed aloes instead of bismuth. The patient would not get the medicine the doctor intended, and the logical conclusion is that it is almost as important, or equally so, that the dispensing of medicines should be done under the supervision of a qualified person, even though the prescription dispensed does not contain a scheduled poison. There is also an economic side to this matter: the dispensing chemist is a necessary organ of the body corporate and his existence should be encouraged. He must be able to earn a reasonable living without having to have recourse to trading devices, which are not on all fours with the status to which his education and training entitle him, and which he ought to be able to maintain if he is to have the complete confidence of the public and the medical profession. We are told on excellent authority that if the law prohibited the dispensing of medicines by the unqualified proprietors of drug stores, there would be less need for the trained chemist to dabble in commodities which often make his place of business look like a barber's shop, and so different from the subdued and dignified appearance of pharmacies in every continental country.

Restrictions on Dispensing.

The Pharmaceutical Society, backed by the vast majority of its members, seeks to regulate dispensing practice, and this is the aim of what in our view are the most important of the amendments which the Society's Council has drafted. One of these amendments proposes a new clause providing that "it shall be unlawful for any person unless he is an authorised person within the measures of this Act to keep open shop *for the compounding or dispensing of drugs or medicines*" (the italics are ours). There is a subclause providing that in hospitals dispensing must be undertaken by or under the supervision of a chemist, but that elsewhere, for instance, in doctors' surgeries, it must be done by or under the supervision of a chemist, or for patients under their care, by or under the supervision of a medical practitioner or dentist. There is a proviso, however, to the effect that the Secretary of State may exempt from the requirements of this subclause an institution where the employment of a chemist is impracticable or not justified owing to the small amount of dispensing, provided that the dispensing in such cases is under the supervision of a medical practitioner. The Council has also decided to seek to tighten up the law as to dispensing in shops. In its original form the Bill did not make it clear that other offences could be committed in a chemist's shop besides that of the irregular sale of poisons. A draft amendment seeks to make it an offence for poisons to be sold, restricted titles used, or medicines dispensed at an unregistered shop.

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[1] THE LANCET, 1930, i., 633.

[2] Cmd. 3512. H.M. Stat. Office. 1930. 1s. 6*d*.

Widening the Scope of Poisons.

Second only in importance, from the point of view of the public, is the determination of the Society's Council to do its utmost to put a check on the indiscriminate sale of substances, which, while not being scheduled poisons, are capable of doing considerable mischief. The amendment by means of which it is sought to bring about this reform would empower the Poisons Board to place in part I. of the list (which consists of drugs which could be sold only through authorised chemists) substances which, while they may not be "poisons" in the accepted sense are drugs which ought not to be sold indiscriminately. It is also sought to include in this part of the poisons list such substances as vaccines and sera, insulin, and some other preparations which require care in storing or deteriorate on keeping. On the controversial question of the licensing of unqualified shopkeepers to sell so-called industrial poisons, the Society's Council appears to realise that it would be useless to attempt to put a stop to the distribution, by persons licensed for the purpose by a local authority, of substances used in horticultural, agricultural, and other industries, but it is sought to place some limit on the poisonous preparations which may be so vended by introducing a form of words which would have the effect of preventing the sale of poisons, by licensed but unqualified persons, for medical or surgical uses. Unfortunately, since the legislation of 1908 substantial vested interests in the sale of arsenical and other poisonous preparations for use as weed-killers and sheep dips have been created; and while the Council would wish to oppose the clause in the new Bill which perpetuates the practice of distributing large quantities of dangerous substances by the hands of the unqualified, it feels that it would be quite useless to make a show of opposition which could not be upheld. The Council intends, however, to press for an amendment requiring the licensing authorities to refuse applications where the reasonable requirements of the public are already met, and to restrict the granting of licences for agricultural and horticultural poisons to people having a bona fide business in farm and garden accessories. It is, indeed, a pity that vested interests should take precedence of public safety, but the Society's Council, having fought so hard in vain in the past, has apparently given up the struggle. We may at least insist that licensed sellers of these poisons will be required to observe strictly any regulations that may be made as to conditions of sale and storage. It should be impossible for a package of arsenic to take its place side by side with a bag of flour in the tradesman's delivery van. Some steps, too, should be taken to prevent the householder who buys arsenic to kill the weeds in his garden from storing the deadly substance in his pantry—even though the Englishman's home is his castle.

An Essential Point.

These are the amendments with which the medical profession and the public will be mainly concerned. With the domestic side of the proposed amendments, such as the amount of registration fees, the constitution of the governing body of the Pharmaceutical Society, and the inspection of chemists' shops, there will be opportunities to deal when the Bill makes progress in Parliament. The principle of reserving the dispensing of medicines to properly qualified persons, provided that the rights of medical practitioners are not encroached upon in any way, should have the support of every thoughtful person.

DARLINGTON WAR MEMORIAL HOSPITAL.—The foundation-stone of the new children's wing of this hospital has been laid by a crippled boy of 12 years' old.

SUPPLY OF SERUM IN EMERGENCIES.

SHOULD any public body be responsible for keeping supplies of antitoxic sera available for doctors who require it immediately—and if so, which body? Newspapers report that at an inquest at Bexley Heath recently, complaint was made that tetanus antitoxin was not available. The medical officer of health, in commenting, stated that, since tetanus antitoxin was rarely called for, the council did not now stock it, but it was available either by passenger train from chemists in London or from the local hospital. He referred to the deterioration of serum on storage. We have inquired of the two largest London firms who supply antitoxin and find that the sera of both are obtainable from West End chemists who maintain a service day and night on every day of the year. Antitoxin does not deteriorate so rapidly as to preclude storage locally if required; if stored in a cellar or cool room the deterioration would probably never be more than 10 per cent. a year. It will probably be found that there is no uniform system amongst local authorities. If every authority felt it a duty to keep stocks of all the various sera liable to be required in an emergency, the burden would be considerable. So far as we are aware, the Ministry of Health has never made a recommendation in this direction. There seems to be no need here for action. There are few doctors in England who would not know where they could, in a real emergency, obtain a supply of serum either from local chemist or hospital, from a colleague, or by passenger train from the nearest large centre.

INVALIDITY IN THE FRENCH SERVICES.

FRANCE in 1919 decided to pension all men in the Services whose health had been damaged during their time with the colours, unless the Service could prove itself in no way responsible. So everyone leaving the Service must appear before an invaliding board that it may be stated whether he should have an invalidity pension, and if so, of what amount. These examinations and assessments have become so important a part of the duty of medical officers in the French navy that Surgeon Commander Penaud has written for their help 120 pages of advice.[1] In the briefest outline, and using English technical terms, it may be said that the medical officer of his depôt brings the man forward for survey after obtaining all relevant facts about him, his age, his marriage, if any, and his children's ages, all his medical history, and, if required, reports of specialists. The man is brought into hospital for examination if necessary, or the specialist is sent to him if that is best. He is shown the specialist's report, and his private doctor may, but hardly ever does, meet the invaliding board. This has four members. The president is a Surgeon Rear Admiral or Captain, appointed by the Minister (i.e. Admiralty), with a deliberative and a casting vote; there is a second medical officer named by the Commander-in-Chief, and two senior executive officers, of a rank junior to that of the president. There are also four assistants, a paymaster, an officer of the recruiting staff, a junior medical officer as secretary, and another medical officer to examine cases if so directed by the president, for the board examines no one, but decides on reports submitted. It need not adopt the opinions of an expert, but then must definitely say so and why. It sees the man and his papers, *pronounces* on his right to a pension, *determines* his degree of invalidity, and *proposes* a rate and duration for his pension, but the *decision* is made by the Minister, to whom the papers, with the Board's report, are forwarded. Total disability seems to get 5760 francs, but there are all sorts of supplements: a man with tubercle bacilli seen gets always total disability, but if he will promise not to work is given 7000; a man totally disabled, and unable to feed himself, or "alone to discharge his needs," may get 12,500, to have permanent help. In some cases rights to treatment are involved, cheap railway tickets, perhaps pensions to widows hereafter or to children. If disability increases a pensioner will always be resurveyed; indeed his interests appear to be minutely safeguarded.

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[1] Arch. de Méd. Nav., 1930, cxix., 237.

Pensions for long service are said to be given to officers after 30 years' service from the age of 16, but after 25 years if six have been at sea or in the colonies. Medical officers are allowed five years for their time in the medical schools. These pensions are not calculated on rank, but on the total emoluments of the last three years on full pay. Apparently a disabled officer will also be given the general service disability pension as given to the men.

DIPHTHERIA PROPHYLAXIS.

New York being the largest example of Schick testing and antidiphtheritic immunisation the figures for prevalence and fatality of diphtheria have a particular interest. The Weekly Bulletin of the City of New York gives the following table of cases of deaths for last year and the preceding nine years. We have added the case mortality-rates (per 1000).

Year.	Cases.	Deaths.	Case mortality per 1000.
1921	15,110	891	59
1922	10,427	873	84
1923	8050	553	69
1924	9687	714	74
1925	9051	663	73
1926	7531	477	63
1927	13,501	717	53
1928	10,776	642	61
1929	8548	463	54
1930	3806	119	31

A PRESCRIBER'S LIST.

UNDER this title Messrs. Roberts and Co., of 76, New Bond-street, London, W.1, issue the third edition of their guide to British and foreign proprietary medical preparations. The arrangement is alphabetical, a therapeutic index is provided, and the information has been simplified in this edition by columns giving the approximate sizes and prices of the various preparations. It is useful to have a list of this kind which shows at a glance the nature, indications, and dosage of remedies commonly advertised. It is impossible to remember the names of more than a few of these, and many practitioners will doubtless take advantage of Messrs. Roberts' offer to send their reference book free of charge to any member of the profession who has not already received it.

THE EVELYN COLLECTION.

AN appeal is being made to save for York and Yorkshire the beautiful and extensive collection of views of the city made by Dr. W. A. Evelyn, consulting physician to the York County Hospital. During the 40 years which Dr. Evelyn has practised his profession with distinction in York he has been a discriminating but open-handed collector of pictures and prints illustrating the history, the ancient appearances, the architectural relics, and developments of the celebrated city. A desire that the necessary dispersal of his treasures should be attended with benefit to York and Yorkshire is now expressed in his offer to dispose of the collection as a whole at a figure which is far from representing the outlay made upon it, provided that a home is found for it in the place of its inspiration; and a representative committee has now been formed to give practical effect to the project.

The pictures form perhaps the finest collection in the country, illustrating the growth, life, and history of one town over three centuries. Included in it are oil paintings, water colours, wash and pencil drawings, etchings, engravings, lithographs, and original copper plates—in all about 1200 works of great artistic and educational value, comprising water colours and sketches by well-known artists such as Girtin, Varley, Copley Fielding, Nicholson, Pyne, and Rowlandson.

The collection will be sold *en bloc*, if the conditions are complied with, for £3000, and cheques should be made payable to Sir Wilfrid Thomson, Bt., Hon. Treasurer, Evelyn Collection Appeal Committee, Westminster Bank, Coney-street, York.

INTERNATIONAL CONFERENCE ON SILICOSIS.

A REPORT [1] on this conference, which was convened at Johannesburg in August, 1930, by the International Labour Office, has been submitted to the Home Office by Dr. E. L. Middleton, who attended as the official representative of Great Britain. Dr. Middleton gives lists of delegates and of the reports contributed to the conference, and outlines the procedure adopted at its sessions. He defines silicosis and other pneumonoconioses, and gives an account of the history of the disease in South Africa and of the events leading up to the establishment of the Miners' Phthisis Medical Bureau. This bureau consists to-day of eight full-time and two part-time medical officers, and is responsible for conducting or directing all medical examinations under the Miners' Phthisis Acts. It is housed in the same building as the South African Institute for Medical Research at Johannesburg, where valuable contributions have been made to the study of silicosis, asbestosis, and tuberculosis.

Dr. Middleton summarises the discussions held in Johannesburg and the conclusions reached. He notes the fact that the problem in this country differs from that in South Africa; the production of silicosis here is not confined to one district or to one set of conditions, but occurs in practically every part of the country and in a great variety of processes.

With the intention of bringing the whole subject within the purview of one advisory body the Medical Research Council have this year appointed a committee on Industrial Pulmonary Disease. By connnecting up a scheme of research with the work of the Silicosis Medical Board, it should be possible to correlate critical and routine investigations into the dust concentrations in different industries, to institute researches in experimental pathology, and to correlate these with studies in the morbid changes in the human lung.

Our Oldest Subscriber.—Sir Temulji Nariman writes to say that he was born on April 3rd, *1848*, and not in 1858 as erroneously stated in THE LANCET of 1930, ii., 1438.

Births, Marriages, and Deaths

BIRTHS.

HAYTHORNTHWAITE.—On Feb. 20th, at Eastchurch, Kent, the wife of Squadron Leader B. F. Haythornthwaite, R.A.F. (Medical Service), of twin boys.

SHERRARD.—On Feb. 16th, at Fairseat, London-road, Beccles, the wife of Noël Sherrard, M.R.C.S., L.R.C.P., of a son.

MARRIAGES.

RORIE—SERCOMBE.—On Feb. 19th, at St. Peter's Church, Bayswater, London, Frank Miller Rorie, M.B., Ch.B., Wellington House, Aberdeen, to Evelyn Alice, fourth daughter of Mr. and Mrs. George Sercombe, Exmouth, S. Devon.

DEATHS.

BYGOTT.—On Feb. 21st, at Bury St. Edmunds, Albert Henr Bygott, medical officer of health for West Suffolk, in hi 63rd year.

LAMBERT.—On Feb. 12th, at Harrow-on-the-Hill, Sydne Herbert Arthur Lambert, M.D. Camb., aged 63 years.

LLOYD-WILLIAMS.—On Feb. 20th, at a nursing home, Edwar Lloyd-Williams, Lt.-Col. T. D., M.R.C.S., L.R.C.P., L.D.S. of Twyhurst, East Grinstead.

OGLE.—On Feb. 21st, at Folkestone, Cyril Ogle, M.D., F.I.C.P. M.R.C.S., of Gloucester-place, W., in his 70th year.

SMITH.—On Feb. 22nd, at Pentwyn, Pentyrch, Glam., Stanle Alwyn Smith, D.S.O., O.B.E., M.D., M.Ch., F.R.C.S.E., aged 47 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

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[1] H.M. Stationery Office. *4d.* An account of this conference by Prof. A. J. Hall appeared in THE LANCET, 1930, ii., 655.

ADDRESSES AND ORIGINAL ARTICLES

SOME LESSONS OF THE DISTRIBUTION OF INFECTIOUS DISEASES IN THE ROYAL NAVY.*

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LECTURE I.

THE eminent founder of these lectures in setting forth their object wrote: "I would express my strong desire that more diligent and continued attention may be paid . . . to the study of the geography of diseases together with the exact chronology of the appearance and persistence of those diseases which are only of occasional and temporary occurrence." I therefore feel the subject of my lecture would meet with Dr. Milroy's approval, and, moreover, I take encouragement from the fact that in suggesting the type of medical man who should be elected as lecturer, he says: "The medical officers of the Army and Navy enjoy specially favourable opportunities of investigating various forms of disease in different regions of the world, not possessed by most practitioners in civil life."

Introduction.

Since 1856 there is an unbroken statistical record of the health of the Navy on various stations all over the world. This record is in some ways unique as a statistical series, because the exact morbidity, mortality, and the number of days' illness caused by each disease is available throughout the whole period. Every case represents a man with a degree of illness such as to prevent him following his occupation. This occupation has remained with small changes much the same throughout the period. The frequency of the different types of occupation in a ship—for example, the relative proportion of officers, seamen, stokers, and marines—may have varied slightly in the period but are constant all over the world during any one year. In the late 'fifties steam was rapidly replacing sail in the Navy, so any influence this may have had on the frequency or type of disease acts throughout the period. The personal equation of medical officers is neutralised by the fact that those serving on one station in one year are serving on some other within the next three years. The standard of diagnosis and fashions in treatment are therefore, during any one period, comparable all over the world and reflect the averaged opinion and behaviour of some 400 to 600 medical men. There is only one standard that determines the day a man comes off the sick list, which is the man's ability to perform his duty; and the only judge who decides when a man is fit for duty is the medical officer. Unlike the civilian practitioner, the naval doctor cannot be subconsciously swayed by the fear of losing his patients if he and they should differ on the question of their ability to work. The naval surgeon can order reluctant subjects to return to duty, while contrariwise he can forbid impatient cases to work before they are fit. The patients themselves have much less inducement to try to stop on, or get off, the sick list before or after they are fit than civilians ashore, who are swayed by such considerations as drawing insurance pay, or losing a job and wages—influences which do not affect the sailor in the Royal Navy.

Throughout the whole period the sex and age grouping of the naval population has been practically constant. The men have been a physically selected A1 population; though this selection may have tended to get more efficient and rigorous as time passed on. At any one time the naval rations are the same as far as possible for each man throughout the world. The diet of the men has been greatly improved since the 'fifties, but may be considered constant for any short period of years.

DENSITY OF POPULATION.

An important factor in the spread of disease is the density of population. In the Navy this factor must approach the maximum possible throughout the whole period under consideration. It is conceivable that the population density of a ship of war may be equalled in a few other special environments such as Chinese inns or even certain tenement houses in English towns, but here the density is not continuous; the men go out to work, the women to shop, the children to school or play in the streets. The popular idea of the free fresh air life at sea dies hard. If one walks round the upper deck of a battleship at any time of the day unless some special drill or evolution is in progress, one will not see 50 men on the upper deck, yet somewhere below one's feet among the interstices of the machinery, living continuously in artificial light, and breathing air forced down to them by a multitude of electric fans, are a population more than a thousand strong. If one wishes to understand the points raised in these lectures it is essential to keep the extreme density of a warship's population continually in mind. The following description may help in visualising this type of environment.

On a hot night in the tropics when heavy rain squalls had forced all men to sleep below and the sea was too high to carry any scuttles—that is to say, when the ship was battened down—I visited the forward mess decks at 5 A.M. after they had been in full occupation for about seven hours. There were 60 men sleeping in the stokers' mess. The scene almost baffles description. Hammocks were slung from every available hook and stanchion and crossed each other in all directions, forming at least two layers of horizontal bodies. Some men, either because they could not find a slinging billet, or because they preferred it, were stretched asleep on the deck, others on and under the mess tables. The space seemed full of man, but by dint of crawling under some hammocks and stepping over others, a space large enough to swing a wet and dry bulb thermometer was found. When allowance was made for the men, machinery, lockers, and other impedimenta the air space was less than 100 cubic feet per man. Yet in spite of having just come out of the open air on the upper deck where it was blowing half a gale, the atmosphere on the stokers' mess deck seemed fresh and the smell of man scarcely perceptible. The temperature in the open air was, dry bulb 78°, wet bulb 73°. On the stokers' mess deck, the dry bulb temperature was only three degrees higher than that on the upper deck—namely, 81 and the wet bulb was 77. According to these thermometer readings scarcely any moisture had accumulated in the atmosphere from the lungs and skin of 60 sweating well-built naval stokers. The wet katathermometer figure was 10·5, which is quite a high index of comfort for men when acclimatised to the tropics. In my own cabin it was only 8·5.

The reason for these good figures in spite of what many would consider the densest overcrowding is, that 120,000 cubic feet of air per hour was being pumped into that stokers' mess; the whole atmosphere was changed every three minutes. The degree of overcrowding has remained unchanged since Nelson's time; if anything, I should say that the density of population in a man-o'-war is greater to-day than 100 years ago, owing to the ever-increasing amount of machinery, and extra personnel to look after it, that of necessity has to be crammed into a modern fighting ship. The ventilation, on the other hand, could scarcely be bettered, whereas in the old days it was practically non-existent and in bad weather, necessitating the closure of all ports and hatches, some parts of an old line of battleship must at times have contained air approaching the condition of vitiation described by Sir Leonard Hill in North Sea trawlers where the CO_2 in the air of the battened-down cabin sometimes reaches a concentration so high that it puts the lamp out. Yet deep sea fishermen are a healthy group, and if they escape drowning, live longer than the average. I therefore think the importance of air supply per se in the prevention of disease has perhaps been overstressed. The beneficial effect of a rapid air change in confined spaces is more due to the flushing out of respiratory droplets and the cooling effect of moving air in the tropics, than to increase of oxygen supply and removal of CO_2.

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* The Milroy lectures delivered before the Royal College of Physicians of London on Feb. 26th, and March 3rd and 5th.

The very nature of a warship, which is a honeycomb of closed compartments, which of necessity have to be water-tight and in bad weather are often completely blocked from any direct communication with the outside air, lends itself to the development of strong smells, while various inaccessible spaces such as the bilges are difficult or impossible always to keep sweet and clean. All through naval medical history one finds *post hoc* explanations worked to death. Peculiar smells, rotting timber, foul bilges, and decaying filth in the ballast, are reported over and over again as causes of sickness and epidemics. Even as late as 1914 a mysterious outbreak of typhoid fever in H.M.S. *Formidable* was considered by some officers as due to decayed organic matter in the cable lockers, until a chronic typhoid carrier was discovered and removed. Efficient ventilation removes or at least dilutes foul smelling air, and therefore perchance its prophylactic virtues have been largely founded on false premises.

There is another factor in the spread of infectious disease, which although it eludes measurement, yet is of great weight. This factor is what Stokes[1] has called "the circulation factor" in a community. Its value depends on the extent, rapidity, and quantity of movement among the members of a community and the amount of inter- and intra-migrations between neighbouring herds, subherds, and individuals, and in the type, duration, and closeness of the resulting contacts. In the Navy this circulation factor must have shown little variation for the last 70 years except in so far as its value was affected by variations in the rate of recruiting.

STUDY OF GROUP INFECTION IN A WARSHIP.

Thus in the Navy occupation, sex, age-grouping, physical condition, standard of fitness for duty, density of population, circulation factor, and the system and arithmetical accuracy of the sick records have remained practically constant for more than 70 years; while diet, the standard of medical diagnosis and treatment, and atmospheric environment (irrespective of climate) have in general been constant throughout the world at any given moment but have been gradually improving throughout the whole period. For these reasons differences in the morbidity and other characters of disease, which are found in the naval statistical records, can be more safely attributed to the changes in climate and the character of the biological agents of infection than is the case with other records, where the external environment and character of the host herd are subject to more complex and wider variations at different times and places.

The properties of a warship itself render it a valuable instrument for the study of group infection. A ship's company during a commission, usually three years in length, is a stable community free from all migration from without, and this group is carried about the world intact, complete with its immediate environment unaltered. The behaviour of the community in different places, climates, and seasons can therefore be easily compared. The medical officer sees, without exception, every man who is unable to work; he also has under his eye all those who are well, and also sees many cases who, while not in perfect health, are not incapacitated enough to stand off duty. In this respect the naval surgeon realises better than most how in some conditions—e.g., diarrhœa and influenza—there may be more people suffering from symptoms not severe enough to hinder them following their ordinary methods of life than would ever have been heard of by a doctor ashore. Moreover, at certain times and under certain conditions this community may be completely isolated from the rest of the world, and if then an epidemic arises its progress and development can be studied with the knowledge that no outside human agency can have interfered with the observed phenomena. The unique character of the naval community, the numerical accuracy of the records, and the intrinsic qualities of ships themselves, enable Nature to show an attentive observer some instructive and controlled experiments.

Natural Experiments.

Here is a well-controlled experiment on the ætiology of cholera.

On Oct. 22nd, 1862, during operations in China 211 men out of the 500 which formed the ship's company of H.M.S. *Euryalus*, proceeded to take a party of soldiers up river in flat-bottomed boats. The naval contingent drank the river water, but the army party took supplies of good water from Shanghai. Cholera broke out on Oct. 25th. The expedition returned to the *Euryalus* on the 20th, after four days' absence. During the following fortnight there were 39 cases of cholera and 54 of dysentery, and 29 men died. Not a case of these intestinal infections occurred among the soldiers. All these cases, with two exceptions among the nursing staff who got "choleraic diarrhœa," were among the sailors who joined the military expedition. Hence 44 per cent. of this ill-fated naval landing party developed cholera or dysentery after their return to the *Euryalus*, while during the same period less than 1 per cent. of the men who had remained on board got infected.

The surgeon of the ship interpreted this experiment as showing that the cholera and dysentery must have been conveyed by the polluted river water, since the disease only occurred among the sailors of the expedition. Notice the use of the two control groups of men. Those left on board showed that the ship itself was free from infection and could have had nothing to do with this epidemic, while the complete freedom of the other control group of soldiers who underwent exactly the same experience in the same boats as the attacked sailors, except that they drank pure water, definitely incriminates the river water as the source of infection.

I think this little naval disaster is a prettier and better-controlled experiment than the classical story of the Broad-street pump. It is true the naval episode took place 10 years later when the water-borne theory of cholera had been well established, but in this naval outbreak the air-borne theory of cholera, which in the early 'sixties still had many adherents, s ruled out. Considering the density of a ship's opulation it is surprising that there was not more ontaminatory spread from the sick sailors who had elonged to this ill-fated landing-party to other embers of the crew who had not been on the expedition. It is also probable, though there is no mention f it, that the *Euryalus* was lying in an anchorage r enough off-shore to be tolerably free from flies. his inference is made from the result of another xperiment, which shows the effect of the fly factor n spreading intestinal infection.

DIARRHŒA AND FLIES.

During the latter part of September and all of October 24, H.M.S. *Barham*, in which I was then serving, lay at oorings in the centre of Valetta harbour. There were nly three cases of diarrhœa bad enough to be stood off uty during this period. In November and December the *arham* was docked in Malta yard. Forty-one cases of vere diarrhœa were "put sick" in November, 18 in ecember. She moved out of dock at the end of December, he diarrhœa incidence dropped to eight in January and to ree in February. That is, the number of diarrhœa tients on the sick list was 20 per month while the ship was dock as against an average of 3·5 during the two months eceding, and the two months following, docking.

Here a whole environment, complete with all its inhabitants, as moved half a mile from one locality to another in the me harbour, and the move coincided with an eight-fold crease in the sick-list for infective enteritis. It may be dded this increase in morbidity is an underestimate, cause at least half the ship's company of over 1000 men ffered from a mild gastro-intestinal disturbance while in ck, which in more than 75 per cent. of instances was not fficiently severe to justify their standing off duty. When a arch was made for a possible cause of this epidemic of testinal infection, it was observed that when moored in e centre of the harbour there were few flies in the ship, hereas while she was in dock, situated close to one of the rtiest slums in Malta, there were swarms of flies in her, d no food could be left uncovered for a minute without ing grossly contaminated by them. It was impossible reduce the number of flies by trapping or "swatting" hen they were recruited by the million from the garbage-rewn streets surrounding the dockyard. This epidemic unlikely to have been due to contamination of food before exposure to the flies in the ship, because the other ships oored out in the harbour used the same kinds of food from he same sources from which the *Barham* drew her supplies. hese ships remained free from the fly nuisance; and their verage morbidity from diarrhœa in November and ecember while the *Barham* was in dock was no greater han in October and January. This observation acts as a ontrol to the *Barham* experiment of removing a community mplete with its immediate environment from a comaratively flyless to a densely fly-infested locality.

CEREBRO-SPINAL FEVER.

The most marked characteristic of hygienic interest hereby a ship differs from the average environment shore is a continuous and dense concentration of s inhabitants. Cerebro-spinal fever is one disease t which all authorities are agreed that overcrowding *par excellence* a factor of great weight in the tiology. Yet, in the sea-going ships of the Royal avy, where the density of population during the ar exceeded anything possible in the depôts and aining establishments ashore, epidemic meningitis ave little trouble. The incidence of cerebro-spinal ver in the boys' training establishments ashore was ver 30 times that in the sea-going squadrons from hich only 64 cases were reported in the five war ears (average strength over 150,000). This naval vidence, in the absence of the Army experience in heir training camps, and J. A. Glover's classical ork on the prevention of meningitis by spacing-out eds, might well have been used as an argument gainst the importance of overcrowding as a factor n the production of cerebro-spinal fever outbreaks. When I pointed out the peculiar relative freedom of hips from cerebro-spinal meningitis,[2] the hypothesis as put forward that, while a ship was in all respects an ideal environment for the development of meningitis epidemics, yet luckily they could not materialise in the Navy because all naval recruits underwent a preliminary training ashore prior to being drafted to sea. During this period they became salted or immunised against meningitis by contact with the numerous carriers of *Neisseria meningitidis* in the training depôts.

This hypothesis badly required a control experiment to support it, since there are truly a lot of differences in a life at sea which might in some unexpected way have inhibited the development of symptomatic infection with *N. meningitidis*. The necessary confirmatory experiment has been supplied by the recent epidemics of cerebro-spinal meningitis in ships carrying emigrants from the Philippines to the Western American ports. According to Geiger[3] the carrier-rate for *N. meningitidis* in these ships was only 2·5 to 4 per cent.—rates much lower than those found in ships of the Royal Navy during the war, and which, according to Glover, were unaccompanied by symptomatic infections among Army recruits, yet in less than three years 319 cases of cerebro-spinal meningitis were reported in ships transporting emigrants from the Philippines to Honolulu, Seattle, or San Francisco.[4] One ship produced 43 cases during the two months' passage, equivalent to 6 per cent. of her passengers.

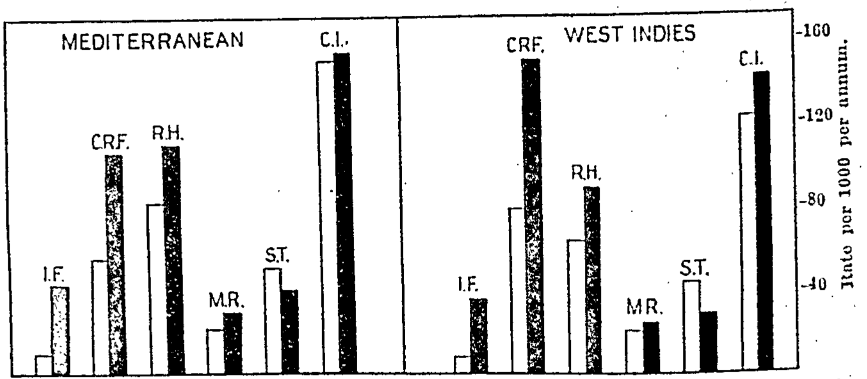
This must be a record morbidity for epidemic meningitis whose causal bacterium, under average conditions, produces some thousands of carrier infections to every case of meningitis. One must note two other important facts: First, in the same period, only three cases of meningitis were found among the emigrants in the concentration camp where they awaited embarkation from the Philippines. Secondly, the disease was practically confined to the passengers, only four cases were recorded among the mercantile seamen. This epidemic at sea among emigrants is good evidence that, provided a ship is populated with susceptible subjects, she is a better environment for the development of epidemic meningitis than even a concentration camp, and a pretty control experiment to the naval war experience on which the inference was made that, provided seamen had undergone a preliminary seasoning process in training establishments ashore, for practical purposes they were immune to epidemic cerebro-spinal meningitis, in spite of inhabiting an ideal environment for bacterial dissemination in which there were numerous carriers of *N. meningitidis*.

Total Disease: Distribution in Time.

I will now describe the alterations in the morbidity and mortality from disease as a whole that have occurred in the Navy during the last 50 to 70 years. Besides the above rates, the average period each case was on the sick list is available. For example, the cases recorded as enteric fever in the naval returns were on the average each 60 days away from duty, whereas men entered as influenza were on the average only six days on the list. Therefore, as regards damage to the working efficiency of a fleet, one case of typhoid is equivalent to 10 cases of influenza. Information as to the average duration of illness is rarely obtainable from other series of vital statistics. Fig. 1 compares these indices of sickness in the Navy for the five years beginning with 1860 and 1923 respectively. The diagrams refer to total disease, excluding all cases of injury and wounds in action. The horizontal row of figures are the ratio of the corresponding rates in the past to those in the present difference in the age-incidence in the naval and industrial groups is inadequate to effect significantly the fairness of this comparison. Also, since there is no evidence that physical fitness in itself has any effect on immunity to respiratory infection, the lower morbidity of the Navy can hardly be ascribed to it being a physically selected population. What, however, might be a factor of immense weight in the higher recorded respiratory morbidity of the industrial group, and on which no data are given for the specific electric light company, is the presence or absence of a sick-pay scheme.

As regards this point Brundage gives a striking comparison of the relative frequency of sickness in two other industrial groups, one whose members were paid while ill, and the other who received no sick pay. The paid group reported three times the amount of sickness as the unpaid. Careful house-to-house visiting showed that malingering was a factor of little weight in the excess of time lost by the paid group. The group who got no sick pay could not afford to stand off work for minor disabilities or remain away till they were fully fit after more severe illness. In fact, the amount of disability in the two groups was practically the same; the recorded morbidity of the unpaid group was only so much less, because so many men were working while they were really unfit to do so. In such a case the naval statistics would be more comparable to those of an industrial community, which, like the Navy, is not financially penalised by sickness. Therefore it appears safe to conclude that the amount of real disability, as opposed to recorded days off work, from respiratory disease, was much less in the Royal Navy than in the electric light company, which was used as a sample of the population ashore, even supposing this company to have had a sick benefit scheme.

FIG. 4.—*Differential Morbidity in Large and Small Ships during the Five Years 1861–65.*



Mediterranean	Large.	Small.	West Indies	Large.	Small.
Mean No. ships per ann...	11·4 ..	20·2	Mean No. ships per ann...	6·8 ..	23·0
Aver. total strength	8000 ..	2460	Aver. total strength	3500 ..	3100
,, ship's complement..	700 ..	122	,, ship's complement..	510 ..	135

Large ships = white columns; small ships = black columns. Ship's complements are corrected for time on station. I.F. = intermittent fever. C.R.F. = continued and remittent fever. R.H. = rheumatism. M.R. (major respiratory) = phthisis and inflammation of the lungs. S.T. (sore-throat) = cynanche. C.I. = catarrh and influenza.

Size of Ship.

There is another factor of importance in determining the total naval morbidity from some infections. This factor is "size of ship." It is only common sense that men in small gunboats employed up tropical rivers will be more prone to insect-borne diseases than ships that keep to salt water. But the large weight of this factor is not generally appreciated. The smaller a ship—not necessarily a sloop or river gunboat—the nearer in general will she anchor to the beach, and the more often will she tie up alongside jetties and moles. To show the effect of "size of ship" Fig. 4 was prepared. The period 1861–65 was taken when fever and rheumatism morbidity was high. Also in this period ships fell very distinctly into two groups, large and small. The selected definition of large ship was one with a complement of over 400 men, and a small vessel was one with a ship's company less than 400. (Over 90 per cent. of "large" ships had a crew exceeding 500, while over 90 per cent. of small had less than 300 men on board.) In order to get significant fever morbidities, foreign stations had to be used. The Mediterranean and West Indies were selected as during the 'sixties the largest number of big ships were employed on these stations. The disease showing the greatest contrast in incidence in large and small ships was "intermittent fever." This disease was undoubtedly malaria and its incidence in the "small" ships was fourfold that in the "large."

The group of diseases entered under the heading "Continued and Remittent Fevers" was a very mixed lot, but the bulk of these fevers were also probably malaria on both stations. This group also included typhoid and paratyphoid infections and a variable proportion of such conditions as dengue and possibly some influenza cases. In the Mediterranean a large fraction of remittent fever was undulant fever, and although "diagnosed" yellow fever was not used in making the West Indian diagram, some of the remittent fever recorded on this station was probably mild yellow fever—the so-called "immunising fever."

On both stations it is seen that the morbidity from "continued and remittent fevers" in large ships was about half what it was in small. The prevalence of both major and minor respiratory disease was not markedly different in the two groups of ships, except that the sore-throat incidence was significantly higher in the big ships of both stations. It is possible this was due to the fact that boys on first going to sea are generally drafted to big ships. The fact that proximity to the shore does not appreciably affect the respiratory morbidity is consistent with the deductions which were made from Fig. 3. For some unknown reason rheumatism is also more a disease of small ships. Seeing the supposed association of tonsillitis with rheumatism, the inverse association of these two conditions in the two groups of ships is interesting. The fact that rheumatism and fever are both definitely small-ship diseases makes one speculate as to if fevers, apart from undulant fever, have any weight in the causation of rheumatism. In Fig. 4 the known association of Mediterranean fever and rheumatism is well shown by comparison of the two stations. In the West Indies, although the incidence of total fevers was so much higher, yet the incidence of rheumatism was lower than in the Mediterranean Fleet.

The "size-of-ship" factor must have had great weight in causing the rapid decline of tropical fever in the Navy as a whole. The fall started in the late 'nineties, well before the intelligent application of antimalarial measures, or the control of undulant fever. The great acceleration in the rate of decline of fever coincided with a period when the Navy doubled its total strength. Most of this increment of population went to the manning of big new cruisers and battleships, therefore the ratio of men serving in large, to men serving in small, ships was about doubled.

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THE PATHOLOGY AND TREATMENT OF VARICOCELE.

A NEW OPERATIVE PROCEDURE.

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THE possibility of cure of varicose veins of the lower limb by injection naturally directs attention to the treatment of varicose veins elsewhere, and the question arises whether the same method is applicable to varicocele. This extension of a new method, from the one condition where it has proved successful to the other, follows an obvious line of thought which is illustrated by a case recorded by Sir Everard Home over a century ago.

Home had reintroduced the principle of ligation of the internal saphenous trunk at the knee for varicose ulcer, and records details of 12 cases in which the operation was done. A certain number of patients made uneventful recoveries, but some suffered from varying degrees of sepsis often associated with operations at that time.

George York, who was a tailor by trade, had previously applied to several surgeons for relief from a varicocele, which made the scrotum so large and the testicles so uneasy that he could not follow his usual employment. He had already been told that the disease was due to enlarged veins, and he had seen two patients with varicose veins of the leg who had received considerable benefit from Home's operation. He attended St. George's Hospital, desiring to know if a similar operation could be performed on the veins of the testicle. The only answer made to this question was, "That I would not propose to him any such operation, having no knowledge of its effects; at the same time believed there was so little danger in it that, if he chose to have it performed, I had no objection to comply with his desires, although I did not feel myself authorised to take it entirely upon myself, I begged he would not at that time come to any resolution, but turn it in his mind before he came to a determination."

Eventually the operation, consisting of exposure and ligation of a convoluted vein in the cord, was performed on March 15th, 1796. The patient's condition caused some anxiety from the fourth day until the eighth, when the ligature came away and "he was well enough to take the park." The slough separated by the sixteenth day and he was practically well by the twenty-sixth. The testicle and its vessels were diminished to one-half of the size they had acquired before the operation.

On Nov. 30th of the same year he returned to hospital with a view to having the testicle still further reduced. "The benefit he had received from the previous operation had so strongly impressed him with a belief that another operation would complete the cure, that all the arguments urged in favour of his being satisfied with his present state were in vain."

Accordingly Home agreed to this, since there was no apparent danger in taking up a large vein lying superficially in the spermatic cord, and this was done on Dec. 2nd. Convalescence was rather more satisfactory than before, but unfortunately, on the thirteenth day, "on account of some very indecent conduct, he was discharged from the hospital by order of the board, the wound being nearly healed. I have since heard that he imprudently exposed himself in the very severe weather about Christmas, caught a violent cold, which fell upon his bowels, and carried him off."

The bulk of evidence favours the view that varix of the lower limbs is produced by forceful refluxes into the superficial system from the deep veins of the limb and from the abdominal trunks.[2] The channels connecting the deep and the superficial veins of the leg are numerous, so that treatment by a series of injections given at sites rationally selected, and repeated if necessary, is likely to give satisfaction in a higher proportion of cases than the alternative operative procedure.

The object of the present account is to elucidate the pathology of varicocele with a view to determining both the value of the routine operation for this condition and the possibility of any improvement in the procedure. The points mentioned in text-book discussions of the ætiology are, that the left testis is usually lower than the right and the column of blood in the left spermatic vein therefore longer; that the left spermatic vein enters the renal vein at an angle and therefore there is more obstruction; and, thirdly, that the vein is further obstructed by the drag of the left colon crossing it when loaded, especially in constipated individuals.

The indications for operation given by Erichsen[3] are as follows:—

> 1. When the existence of a varicocele disqualifies the sufferer from admission into the public services. One of the cases in which I have effected a radical cure was that of a man in the prime of life, who, wishing to enlist in the Marines, was refused solely on the ground of his having a small varicocele. This I cured by operation, and the man afterwards entered the service.
>
> 2. In some cases the presence of a varicocele of inordinate size causes a distressing sense of weight and pain in the loins and groins, and often inability to stand or walk for any length of time. Here, when the patient is in continual discomfort or more or less prevented from pursuing his ordinary avocations, it is perfectly justifiable to resort to operation.
>
> 3. Cases not uncommonly occur where the pressure of the enlarged veins on the spermatic nerve produces repeated attacks of spermatorrhœa. These cases are, however, more frequently met with out of hospitals than in individuals of the class who apply to such institutions for relief. In fact, young men of the more educated classes are very subject to varicocele, especially those who habitually lead a sedentary and studious life, as, for instance, young clergymen and lawyers. In these persons a peculiarly hypochondriacal state is brought on by the tendency of the mind to dwell on the condition of the genital organs, and the patient is constantly fidgeting about the local and tangible disease he observes in them.

Before 1914 and early in the war, radical treatment for varicocele was a compulsory Army measure. The results obtained were by no means satisfactory for the conditions of active military service, and in the latter part of the war resort to operation was discouraged. At the present time inability to find any satisfactory line of treatment drives the teacher of surgery to avoid serious attempts to come to grips with this commonplace problem. After describing the unfortunate condition of the neurotic patient and enumerating a long list of the complications resulting from the ordinary radical operation, he usually finishes the discourse with a warning not to operate on the condition lest the last state of the patient be worse than the first. It is customary to add that, even if untreated, the symptoms of varicocele usually pass off, although the pathological condition does not improve. The condition in this way, however, is somewhat comparable to varicose veins elsewhere. During onset considerable distress is caused, but at a later date with worse function the patient often becomes less troubled.

Anatomy of the Spermatic Veins.

The spermatic veins on each side issue from the testis and epididymis and form the pampiniform plexus.

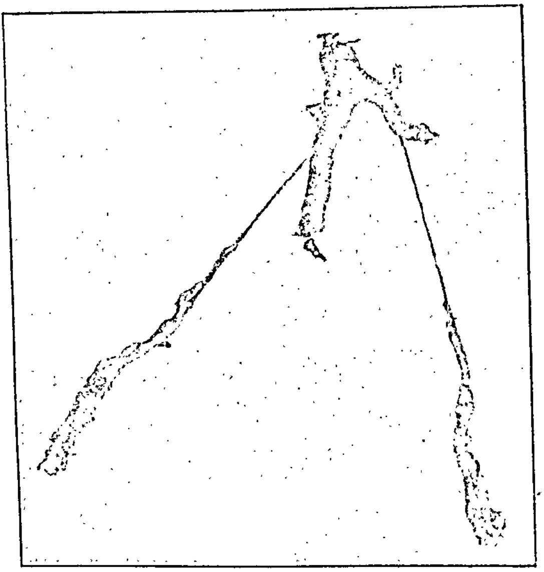
This plexus is one of the constituents of the spermatic cord, and consists of from eight to ten veins, most of which lie anterior to the ductus deferens. It passes upwards through the scrotum and enters the inguinal canal, where it resolves itself into two or three main trunks, usually one small trunk posterior to the cord and one large one, or two, anterior to it. These unite within a short distance of the inguinal ring and form the single spermatic vein which ascends with the corresponding spermatic artery. The whole extent of these trunks is therefore usually accessible after opening the inguinal canal.

With regard to the presence of valves in the spermatic veins, the following statements are found in Franklin's "Survey of Valves"[4]:—

> Monro found ostial and parietal valves in the spermatic veins and their branches in man, but none in human ovarian veins.
>
> Rivington concludes that there is a bicuspid valve near the orifices of human spermatic and ovarian veins, with few exceptions.
>
> Piersol states that the right spermatic has an ostial valve, but otherwise there are no valves in the spermatic or ovarian trunks.

These factors which have so often been held to contribute to the condition suggest that vis-a-tergo is the actual productive force, while the determining factor is the increased pressure resulting from small mechanical obstructions. Reflux from abdominal and deep main veins is the chief factor in the causation of ordinary varicose veins; the question arises whether varicocele is caused in the same way. Some experiments carried out on the cadaver throw light on this subject. Thus in the normal body the entrance to both spermatic veins is completely valved, and there is therefore no possibility of back-flow from the vena cava (Fig. 1). Injection of fluid down the spermatic vein itself in the normal subject showed that with little head of pressure the entire spermatic vein and pampiniform plexus filled. This injection was repeated over three or four cases and in each case the same result was obtained (Fig. 2). In no case was there the least resistance offered to the entire filling of the pampiniform plexus. When varicocele is present the left terminal valve is incompetent and the whole of the pampiniform plexus can be injected from the vena cava. This condition I have found post mortem in four cases with varicocele.

FIG. 1.



Photograph of anatomical specimen. Vena cava, spermatic veins, pampiniform plexuses. Injection at high pressure of the inferior vena cava in the normal subject, showing valvular protection at orifices of spermatic veins. The vena cava and left renal vein are grossly distended, but no fluid has entered either spermatic vein.

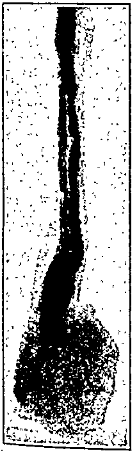
Cause and Treatment of Varicocele.

These findings suggest that varicocele depends primarily on this incompetence at the orifice of the spermatic vein, and further that the condition is produced by refluxes from the vena cava along the spermatic vein. In further support of this view it may be noted that in the majority of cases unilateral varicocele, which is usually left-sided, exists clinically with no apparent cause of mechanical obstruction to the venous return, not even constipation. It seems justifiable, therefore, to state that the force responsible for the varicose condition of the pampiniform plexus does not result from the vis-a-tergo of the blood stream, but from rises of intra-abdominal pressure transmitted along the unvalved left spermatic vein. Although this conception of the causation is of considerable importance theoretically, it does not appear at the outset more promising as a basis for practical treatment than does the accepted view. For the spermatic vein is a single channel, and if it is not naturally protected from refluxes by valves, what steps can be taken to secure the necessary protection from back-pressure for the portion of the pampiniform plexus that has only the lax tissues of the scrotum to support it?

The existence of competent valves within the plexus now becomes of primary importance, and further investigations were made on them. In several normal cases the pampiniform plexus was filled and dissection employed to trace out the anatomy of the veins, particularly in regard to valves. The average conditions found in six post-mortem cases are represented in the diagram (Fig. 3). There are either one or two anterior trunks present. Fairly frequently—four out of six cases—the posterior spermatic trunk has a valve near its termination, but lower down the other trunks often have competent valves. The valves are rendered useless because of the free communication between the trunks of the plexus, around which blood can flow downwards with increase of intra-abdominal pressure. Thus the fluid poured into the vein above finds its way to the lower end of the pampiniform plexus. It is, however, frequently possible, by an operation in which the trunks of the plexus are carefully explored, to excise the channels which are not valved, leaving a pampiniform plexus protected by two or three valves. In all cases examined either post mortem (six cases) or at operation (eight cases) there have always been found one or more valves which may be utilised to guard this channel. Fortunately, the veins thus valved lie within the inguinal canal and hence are adequately supported laterally during effort.

I conclude, therefore, that injection is not the most logical method of treatment for varicocele. Although it may achieve the same effect as the ordinary surgical operation in which a large portion of the plexus is excised, the amount of the varicose plexus obliterated is not so easily controlled by injection as by operation. It should, however, be noted that in the majority of cases in civilian practice the patient is more satisfied than the surgeon with the final result of the ordinary surgical operation. Corner and Nitch[5] reviewed 100 cases and found that 20 patients still suffered pain and four were even worse for the operation. However, in spite of the fact that a hydrocele was present in 23 cases, fibrosis of the testicle in 55, and atrophy in 21, it was found that at least 70 of the patients were comfortable and well satisfied with the operation. If this represents a satisfactory standard of amelioration in this condition, it may eventually prove, when the results have been followed for a sufficient length of time, that the injection method will serve the purpose in the average case. In the absence of this knowledge, however, an operation reconstructing a valved channel out of the trunks of the plexus appears to be the procedure of choice.

FIG. 2.



Radiogram of anatomical specimen. Injection at low pressure into the termination of the spermatic vein in the normal subject, filling the whole plexus.

FIG. 3.

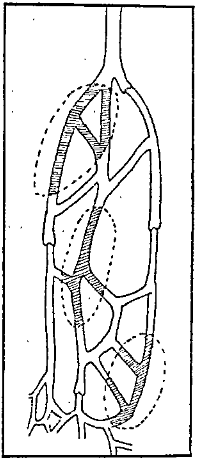


Diagram of formation of spermatic vein from three trunks at the level of the internal ring. The posterior trunk, shown on the right, is valved. The two anterior trunks are unvalved. By removal of the shaded areas a valved plexus is formed.

OPERATION.

In varicocele giving rise to considerable inconvenience I recommend the following operation. The inguinal canal is opened and, by linear division of the coverings of the cord, the vas is exposed surrounded by venous trunks which terminate above in the single spermatic vein. These main trunks are carefully defined from above downwards. Valves in these channels present themselves as dilatations. The competence of any particular valve is proved by the absence of reflux of blood downwards after the segment of vein below has been emptied upwards. The upper two inches of the trunks usually contain two or three valves. Excision of the unvalved routes is next carried out, leaving a channel including a number of competent valves (Fig. 3).

The dissection of the plexus is continued down to the testis and the greater part of its lower portion removed. In doing this care must be taken to have the veins clearly dissected before ligatures are applied to them. Ligation "en masse" is unnecessary and may be responsible for the inclusion of arterial and nerve elements, with the consequent introduction of other factors incompletely understood. It is a reconstructive operation on veins and therefore should be confined to veins as far as possible. If no competent valves can be found, this procedure is not applicable and the surgeon is compelled to resort to the ordinary operation of partial excision.

This operation is obviously more tedious than the ordinary one, but it seems fair to claim that it is the only one that makes a rational attempt to restore a normal valve-protected path for blood returning from the testicles.

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CIRCUMCISION UNDER LOCAL ANALGESIA,

WITH THE APPLICATION OF A CONTINUOUS SUTURE.

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AT the male London Lock Hospital the routine examination of 500 to 700 venereal disease cases a week led my attention to the fact that 20 per cent. of patients needed circumcision; these cases included such acute conditions as phimosis arising from preputial chancres or gonococcal ulceration. Circumcision could only be performed by inducing the patients to take an hour off from work and assuring them that no general anæsthetic was required and, moreover, that no pain would be felt.

Thus was introduced circumcision under local infiltration with novocain and adrenalin, and the subsequent application of a continuous suture to prevent secondary hæmorrhage. The whole procedure is performed in ten minutes in straightforward cases, and very few cases require general anæsthesia. The old method of circumcision under gas proved to be a rush job, and the cases had to be detained some hours, with the likelihood of recurrent hæmorrhage due to the venous congestion induced by the nitrous oxide administration. The anæsthesia being a short one, the sutures were quickly tied, and the interrupted method did not produce such a fine line of coaptation as that of the continuous suture. Moreover, these sutures were found to cause painful erection by their irritation and friction, besides sticking to the dressing and sloughing-out.

On an average 120 men were circumcised at the London Lock Hospital each quarter. The method is suitable for cases in which phimosis has not persisted long enough to produce too severe a phagedæna of the penis or an extensive suppuration of the prepuce, which contra-indicates the infiltration with novocain. In primary phimosis the skin and mucous membrane are directly infiltrated with novocain by retraction of the prepuce; in secondary phimosis, where the prepuce cannot be retracted, the skin is infiltrated and a dorsal slit is first made; this gives access to the mucous membrane around the corona glandis, which is infiltrated in its turn. In my opinion, a dorsal slit should always be immediately followed by circumcision whenever possible. The area laid open to sepsis by a dorsal incision is as likely to open up fresh areas to sepsis as a complete circumcision; very few patients return for a complete circumcision later, and the permanent result is a glans surrounded by a mass of redundant tissue, which is very liable to ulceration in patients subjected to the risk of venereal reinfection.

However septic the prepuce may be, the area is so vascular that the ultimate healing of the wound is astounding; a case of early gangrene is aborted by complete excision of the prepuce and submucous tissue.

Technique.

The method employed is so simple that straightforward cases could be treated on the ordinary examining couch of a consulting room. The penis is shaved, an antiseptic solution is applied, and a 2 per cent. solution of novocain with equal parts of adrenalin 1/10,000 is infiltrated over the skin area corresponding to the corona glandis. The prepuce is retracted and the reflection of membrane from the corona to the prepuce is well infiltrated with the solution, about 10 c.cm. in all being injected. The success of the procedure lies in using a large amount of solution, for the submucous layer becomes so infiltrated that a localised œdema is produced, and this places the venous supply well away from the advancing knife or scissors. The only hæmorrhage which usually results is from the cut membrane of the corona glandis and the artery at the frenum. After the injection, the end of the penis is massaged and no excision is made until complete ischæmia shows that analgesia and hæmostasis are complete.

The actual surgical method depends upon the requirements of the operator and the degree of phimosis. The use of phimosis clamps in general practice is to be preferred when the condition permits, for it gives an elliptical incision, owing to the mechanical precision of the device. Again the experience of the surgeon is called for in deciding how much membrane is to be excised. If the penile skin is sacrificed at the expense of the reflected membrane from the sulcus to the preputial margin, then a good result follows, as this avoids the risk of adhesions and the likelihood of a roll of prepuce forming over the sulcus later.

APPLICATION OF A CONTINUOUS SUTURE.

It was found that the application of a continuous suture became a necessity in those cases where time and the prevention of recurrent hæmorrhage were essential. The suture is best commenced from the dorsal aspect of the circumcision, the free end being secured by retaining forceps, whence it is carried round in an elliptical manner through the opposed edge of the penile skin and the mucous membrane of the glans. The frenum is clamped into correct alignment with the median raphe of the shaft and so the deformity following torsion is avoided. The stitch employed is of the simple oversew type and will secure the frenum well into position when the clamp is removed and the suture carried on to its commencement, the two free ends being tied off at the dorsal aspect of the penis. It is advisable to select the dorsum as the site for tying off, as a knot at the frenum is apt to cause ulceration, since the two ends of the suture cause more irritation at this site where friction and the accummulation of moisture are likely to occur. In applying the continuous suture, the stitch should not be drawn through too tightly but should be lax enough to enable the serum to exude between the everted edges of the wound. Sloughing out of the catgut is thus avoided, and in the event of secondary hæmorrhage no extravasation of blood into the penile and scrotal tissues is likely to occur.

The following points are worthy of consideration:—

(*a*) The avoidance of a baggy tissue mass at the frenum, which almost always appears as a slight degree of paraphimosis. This "*baggy frenum*" is avoided by thoroughly excising the redundant tissue at the frenum and leaving no excess of membrane, for if the frenum is incised in the primary incision no harm accrues, as good coaptation is effected by immediate suture of the opposed margins and the glans become well anchored down.

(*b*) The avoidance of the bent penis which appears on erection if the median raphe on the ventrum has been twisted and sutured to the dorsum of the excised coronal edge of the glans. It is the result of rotation of the corpora within the penile covering.

Reasons for Circumcision.

Circumcision is indicated in all ulceration which involves the prepuce and glans, whether simple or specific. In the first case, it serves as a means of draining the pent-up discharge around the sulcus and avoids the likelihood of gangrene. In the second case it avoids the liability to chancre redux some years later. The so-called venereal warts, really due to smegma and moisture collecting around the coronal sulcus, are permanently removed by circumcision. How many warts and epitheliomata of the glans penis are seen in the circumcised?

The only contra-indication to the continuous suture is where a chancre or soft sore appears in the line of the wound; in this case interrupted sutures at some distance from the sores are indicated. Incidentally I found syphilitic or soft sore ulceration to be no contra-indication to circumcision, provided the case was receiving suitable treatment—viz., novarsenobenzol or tartar emetic.

The after-treatment consists in keeping the sutures moist with ribbon gauze soaked in a preparation of vaseline and acriflavine. Thus dressing prevents sticking and is antiseptic, so that the first change need not be made until the second day, the sutures being removed on the fifth day.

Cases of recurrent herpes preputialis, involving prepuce and glans respond immediately to circumcision. As this complaint may become a very aggravating and worrying one to the sensitive patient, it is worth advising operation. Likewise I have found circumcision prove a definite cure in masturbation cases, as the sensitive coronal tissue has been removed and replaced by less delicate tissue, so that part of the reflex, as it were, had been interfered with and a sensory stimulus was less easily provoked.

Through routine examination of many hundreds of venereal patients, I noticed that most cases of primary sores found on the corona and glans arose in the non-circumcised; for, proportionately, Jews contract more gonorrhœa than syphilis. This is accounted for, in my opinion, by the fact that the preputial reflexion from the glans consists of more delicate tissue than the partially keratinised epithelium produced after circumcision, by exposure and friction, at the coronal sulcus; the latter is therefore less liable to inoculation by the *Spirochæta pallida*.

DEWSBURY GENERAL INFIRMARY.—The cost of each in-patients at this hospital in 1930 was £120 3*s*. 10*d*. *The cost per* occupied bed as against £118 1*s*. 4*d*. in 1929. The cost per patient is £5 6*s*. 3*d*.

THE MANTOUX TEST.

AN ANALYSIS OF 500 CASES.

By Wilfrid F. Gaisford, M.D., M.R.C.P.Lond.,
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It was thought that it might be of interest to perform the Mantoux test for a period of time on all children admitted to the East London Children's Hospital and to see how the results obtained in the slum district served by this hospital compared with those observed in America and elsewhere. The reaction was used as a routine from the middle of January to the middle of April, and the results in 250 children tested are recorded below. Subsequently the use of the test was confined to certain selected cases with a view to aiding diagnosis, and the results of a further 100 such cases are given. In November the routine use of the test was recommenced and 150 children were tested between then and the end of the year.

In this third group, the findings of which follow, special care was taken to avoid the sources of error to which experience has shown the test is liable. The main sources of error are as follows: (*a*) suppression of the reaction due to diminution of skin sensitivity during acute illness associated with fever[1]; (*b*) suppression owing to the severity or extent of the tuberculous infection—e.g., miliary tuberculosis[2]; (*c*) suppression due to altered allergy as the result of recent illness—e.g., during convalescence after measles.[3] Furthermore, such of those cases amongst the first 250 as gave reactions which might have been invalidated by the foregoing sources of error were reconsidered as to the history and to the presence of pyrexia at the time the test was performed. In 20 cases a second test was made at varying intervals from one to eight months. Finally, in this third group, the area of erythema and pigmentation was measured in every positive case.

Technique and Results.

The usual technique was followed—viz., the use of 0·1 c.cm. of 1/1000 Old Tuberculin (equivalent to 1/10 mg.) intradermally. Human and bovine tuberculin were both used in the first 50 cases, until it became apparent that there was no difference in the reaction to the two types—a positive human always yielding a positive bovine and a negative human always a negative bovine also. This was repeated in a small series in Group 3 with identical results. The tuberculin was prepared in the usual way by dilution with normal saline, and 0·5 per cent. phenol was added as preservative. It was found that the solution would keep for several weeks on ice without any evident deterioration, and frequent checks were made to ensure reliability of results.

An all-glass syringe and special intradermal needle are almost essential, as experience showed that the reading of the result could be grossly misleading unless the tuberculin had been injected entirely intradermally. No blood should ever follow the withdrawal of the needle, and there should be a raised dead-white wheal a quarter of an inch in diameter. To get a satisfactory wheal it is advisable to grip the forearm at the site of injection very firmly and exert considerable tension on the skin, when the insertion of the needle is not felt at all and even a small child will remain quiescent. The flexor surface of the mid-forearm makes a satisfactory site. The left arm was used in all cases in this series so as to obviate mistakes in the subsequent readings. Control tests were not made, as Smith [1] showed that they were unnecessary.

Readings were taken after 24 and 48 hours in all cases, and in the cases yielding positive reactions observations were carried out every other day subsequently until discharge. The positive reactions fell into two main groups, which differed in the intensity of the local manifestations. In both there was, at the site of injection, a circular or elliptical wheal of varying diameter up to 1½ inches. This was composed of two definite strata—an outer erythema and an inner brawny œdema. In the more acute type there was also a central vesicular area, and the extent of the erythema was greater. The outer layer faded more quickly, usually after three to five days; the other area desquamated in its entirety and the brown discoloration persisted for two to ten weeks. This discoloration is the essential part of the positive reaction and seems to be the "constant," in contrast to the erythema and vesicle formation, which probably vary with the state of sensitivity of the patient at the time of injection.

In no case was there any constitutional reaction or regional gland involvement. It seemed in many cases that the most acute reactions occurred in children with active disease (as opposed to infection), but further observations will be necessary before this can be accepted definitely. At any rate the acute reactions in young children and infants proved to be of bad prognostic significance, but in the older children this was not always so. In the negative reactions, the wheal disappeared an hour or so after injection and nothing further was visible on the arm at any time.

ANOMALOUS REACTIONS.

A. *Pseudopositive.*—Three times after bovine, and five times after human tuberculin had been injected, transitory areas of erythema were observed for 6 to 24 hours around the site of injection. There was no induration, the area was small and irregular in outline, and by the following day all erythema had entirely disappeared. These cases, clinically, gave no evidence of past or present infection with any form of tuberculosis.

B. *Delayed Positive.*—In six cases the appearance of the skin reaction was delayed for varying times up to eight days. One was in a scrofulous child admitted for debility following measles. This reaction was delayed for four days, but then became a typical positive, the desquamated area being visible for three weeks. Another was delayed for eight days in a child with tuberculous peritonitis who developed a fæcal fistula from which the specific bacilli were obtained. Another was delayed for seven days—also a child with tuberculous peritonitis who subsequently died from a cerebral abscess following mastoiditis. The other three (one in a tuberculous pleurisy, one in a pneumonia, and the third in an osteomyelitis) were all tested during fever. The first may be explained by Mitchell's work[3] and the remainder by Smith's,[1] for while the second and third were not actually febrile at the time of the test, they were both running intermittent temperatures. In the child with pneumonia, the reaction became positive after 24 hours with a second dose of 0·2 mg.

Unselected Cases: First Group.

Group 1 consisted of 250 unselected cases, and gave the following results:—

Positive: 60 (24 per cent.). Confirmed by biopsy, autopsy, or bacteriologically from the cerebro-spinal fluid or sputum, 12 (25 per cent.). Confirmed suggestively by X rays (joints and thorax) 9 (15 per cent.). There was no clinical or X ray evidence in 39 (60 per cent.).

Negative: 190 (76 per cent.). One of these was found at autopsy to have tuberculous meningitis. This case (an infant of 1 month) was the only negative in this series which subsequently showed evidence of tuberculous infection. He was only tested once, with 0·1 mg. There was no fever at the time the test was made, so presumably the explanation offered by Happ and Casparis[2] that in extensive tuberculosis the reaction may be negative unless a large dose (e.g., 1·0 mg.) of tuberculin be used may account for the failure.

The high percentage of "positives" without any clinical evidence suggests that infection with tuberculosis is not uncommon, and the majority of these gave the less acute type of positive reaction. This also lends evidence to the endogenous theory of adult tuberculosis—viz., that it is the third stage of tuberculosis in childhood. It is in such cases that prophylaxis may be of real value, and if these children are treated as potential tuberculous patients their ultimate outlook may be greatly improved.

The following case reports show the manner in which the test may be of diagnostic value.

NEGATIVE REACTIONS.

Case 1.—A boy of 9 years had been treated here three years previously for "tuberculous cervical adenitis." He had been at a seaside home for two years, and the glands in his neck broke down repeatedly. He was admitted in March, 1930, for reinvestigation. The Mantoux was negative with 0·1 and 0·2 mg., both human and bovine. Examination of the neck revealed a large sloughing area at the site of the "breaking-down gland," and this ulcerated surface looked suspiciously like a gumma. There were no other stigmata of congenital syphilis, but the Wassermann reaction proved to be strongly positive, and under anti-syphilitic treatment the ulcer cleared completely in a few weeks, and his neck is now healed.

Case 2.—A boy of 1 year and 5 months was admitted because of "convulsions." Lumbar puncture showed a fluid containing 60 lymphocytes per c.mm. A diagnosis of tuberculous meningitis was made and the prognosis formed accordingly. As the infant got better day by day (subsequent lumbar puncture showing four lymphocytes per c.mm.), he was finally discharged quite well, and still remains so. His Mantoux was negative on admission, and was repeated two months after his discharge, when it was still negative. This was presumably a case of serous meningitis, as there has been nothing to suggest a poliomyelitis or encephalitis.

Case 3.—A girl of 2 years was admitted from the out-patient department as a case of bronchiectasis, and the diagnosis was confirmed by lipiodol injection. She developed fever, vomiting, and drowsiness, and looked a typical tuberculous meningitis. Her Mantoux (human and bovine) was negative. The condition cleared up, though she went through a similar phase twice subsequently. This was a case of recurrent "pneumonitis."

Case 4.—A boy of 2 years was admitted in convulsions. Lumbar puncture showed 350 lymphocytes and a protein of 30. The Mantoux was negative and, though he appeared drowsy and pyrexial for some days, the cell count in the cerebro-spinal fluid fell gradually, and he made an uncomplicated recovery. This was probably a case of poliomyelitis (absence of the right knee-jerk being observed subsequently). At first it was thought to be a tuberculous meningitis, but this was negatived by the protein content of the cerebro-spinal fluid, Grey[4] having shown that a protein of only 30 definitely excludes a meningitis.

Case 5.—A girl of 10 months was admitted because of "loss of weight and limping on left leg, and pain when left hip was touched." The Mantoux was negative. After three weeks she developed a psoas abscess, which on incision yielded a pure culture of *Streptococcus hæmolyticus*. After three blood transfusions she made an uninterrupted recovery.

Case 6.—A girl of 5 years was admitted in coma, which had lasted for 24 hours. Clinically she looked as if she were suffering from tuberculous meningitis. The cerebro-spinal fluid showed 250 lymphocytes and a protein of 30. The Mantoux was negative. She had been vaccinated 14 days previously. The child died after ten days from post-vaccinal encephalitis. At autopsy there was no evidence of tuberculosis anywhere.

The East London Hospital has a certain number of beds reserved for London County Council cases of tuberculosis. These cases may be admitted for observation, diagnosis, or special treatment (e.g., tonsillectomy). The routine Mantoux on these children has been most valuable. Thus:—

Case 7.—A girl of 11 years was admitted as a case of "tuberculous peritonitis." She suffered from occasional bouts of fever, vomiting, and pain in the abdomen. The Mantoux was negative. At laparotomy a chronically inflamed appendix was found, but there was no evidence of tuberculosis.

Several cases sent in as tuberculous have been cleared of this stigma and enabled to return to normal life. There are many children who do not gain weight, have cough, occasional slight fever and "suggestive" extension of hilar shadows," and a good percentage of these are not tuberculous. In such cases the Mantoux test is of real value.

POSITIVE REACTIONS.

Case 8.—A girl of 2 years was admitted with broncho-pneumonia following measles. Her Mantoux was strongly positive. The illness ran a "stormy" course, including an acute pneumococcal cervical adenitis. The child was finally discharged to the hospital's convalescent home at Bognor, but she returned four weeks later with tuberculous meningitis, from which she died after 20 days' illness.

Case 9.—A girl of 9 months was admitted with vomiting and loss of weight. Her Mantoux was strongly positive. Tuberculous meningitis developed and was confirmed at autopsy (the cerebro-spinal fluid showed lymphocytes and protein 110). There were five children in this family all under 14, and after the death of the patient they were brought up by the parents for a Mantoux test. Only one showed a positive reaction—the eldest boy, aged 13 years and he had been the only one to nurse the infant.

Case 10.—A boy of 1 year was admitted because of swelling in each groin. The swellings had been noticed for about six months, and were getting bigger. The Mantoux was strongly positive. On examination he was found to have two buboes, and the pus obtained therefrom at operation showed tubercle bacilli. This was a case of tuberculous inguinal adenitis following ritual circumcision.

Case 11.—An infant of 1 year and 4 months wa admitted with an empyema following pneumonia. It wa apparently a straightforward metapneumonic empyema and the organism was a pneumococcus. Despite a negative family history of tuberculosis, the Mantoux was found strongly positive, though there was no clinical evidence of any active lesion in the patient. Rib resection was pe formed, and the child seemed improved. Eight months later, however, the wound was still discharging freely, and signs of developing amyloid disease becoming evident.

In all non-clinical "positives" a routine radiogra of the chest was taken, and while the majority of these were negative or inconclusive, three showe "pleuro-mediastinitis" shadows such as occur no infrequently in tuberculosis (or epi-tuberculosis). All three cases did well after a long spell at the seaside, and on return the radiograms showed that considerable improvement had taken place.

Selected and Unselected Cases.

In a selected group of 100 cases the test wa performed purely as a diagnostic aid, and only tho cases suspected of tuberculosis or in whom it wa particularly important to exclude tuberculosis as th cause of the symptoms were included.

The results showed 38 per cent. positive and 62 p cent. negative. These children were suffering fro chronic lymphadenitis, debility, "P.U.O.," coug abdominal pain, or diarrhœa. That the percent of "positives" in this group was higher than in t first group (38 as compared with 24) is not surprisi seeing that some of the latter were healthy child admitted for herniotomy, &c., and in the majori of whom there was no suggestion of tuberculosis.

Some of the children in this group were collect from the out-patient department of the hospital, an here there were two classes of children particula prolific of positive reactions—viz., those attendin the ophthalmic out-patient department and tho attending the rheumatism clinic. The forme group were characteristically scrofulous, and ma were malnourished children with phlyctenular co junctivitis. In this connexion it is interesting recall Dickey's results[5]; he found a family history of allergy in a large percentage of the cases with conjunctivitis, and considered the conjunctivitis was evidence of the patients' hypersensitiveness to tuberculin in the same way that asthma may be evidence of hypersensitiveness to pollen, &c. The high percentage in the rheumatic group perhaps hardly admits of fair comparison, because these children were all older and therefore more liable to react positively.

Further Unselected Cases.

In the third group, of 150 unselected children, there were 26 positive (18 per cent.) and 124 negative (82 per cent.). Of the positives, ten were "acute," 16 less acute. The average area of erythema observed was 250 sq. mm., and of desquamation and pigmentation, 130 sq. mm.

Necrosis at the site of injection occurred in one case only in the whole series. There was no accompanying adenitis. The patient was a boy of 5 years who had purpura hæmorrhagica. He was bleeding (epistaxis and crops of purpuric spots) at the time of the test. One week later, during which there had been no further purpuric manifestations, he was retested, and no necrosis was observed.

The figures obtained from the 400 unselected cases grouped together are as follows: Positive 86 (21·5 per cent.); negative 314 (78·5 per cent.); number of cases confirmed, 31 (23 ante mortem and eight post mortem).

In view of the time taken for a tuberculous lesion to heal completely, it is as well to regard any child under the age of 7 years with a positive reaction as needing active treatment, whether this be merely extra open-air or added amounts of vitamin D in the diet in the hope of promoting calcification around the focus of infection.

Conclusions.

1. The Mantoux test is extremely valuable in children. It is easy to perform and is quite painless to the average child.

2. Care being taken to exclude the sources of error mentioned, a negative result excludes tuberculous infection and is a comforting finding in debilitated children after measles, whooping-cough, and bronchopneumonia, and in cases of chronic cervical adenitis and so-called "intestinal indigestion."

3. A strongly positive result in young children suggests active tuberculous disease and usually justifies a bad prognosis.

4. A mild positive result indicates tuberculous infection (not necessarily disease), and children showing such a reaction would benefit from open-air treatment and increased prophylactic precautions.

I am indebted to Mr. Acton Davis, Dr. Geoffrey Bourne, and Dr. Kenneth Stone for permission to use their case reports.

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2. Happ, W. M., and Casparis, H. R.: Ibid., 1922, xxiii., 527.
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CLINICAL AND LABORATORY NOTES

TRAUMATIC RUPTURE OF THE NORMAL SPLEEN.

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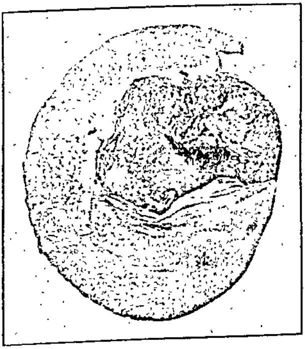
CASES of spontaneous rupture of the pathological spleen are fairly common, as are also cases of direct traumatic rupture. Cases of spontaneous rupture of the normal spleen, on the other hand, are exceedingly rare. Hamilton Bailey[1] states that he could only find nine authentic cases in the literature in addition to the one which he records. M. P. Susman[2] describes two cases which were at first thought to be cases of spontaneous rupture, but where subsequent enquiry elicited a history of a blow at some previous date. The case here recorded falls into this last category.

The patient, a married woman aged 34, was admitted to hospital on June 23rd, 1930, with the following history. On waking up that morning she had not felt very well and had only had a cup of tea for breakfast. About 10 o'clock she was seized with a severe pain in the epigastric region, which brought her to her knees. She did not vomit either at the onset of the pain or at any subsequent time during the day. The pain persisted all day, nothing giving her any relief. About midday the relatives noticed that she was beginning to look pale. On admission at 9.30 P.M. she was extremely pale and looked very exsanguinated. Her temperature was 97·6° F., her pulse-rate 120, and her respiration-rate 8. There was no marked restlessness or air-hunger.

There was a generalised tenderness on pressure all over the abdomen, most marked in the right hypochondrium. There was also tenderness in the left hypochondrium, but no rigidity either at this point or anywhere else in the abdomen. The patient complained of severe pain in the left shoulder region (Kehr's sign), which was worst on taking a deep breath. There was, however, no cutaneous hyperæsthesia over the shoulder. The area over the stomach and over the anterior surface of the left lung, up to the level of the third rib, was tympanitic on percussion. There was dullness in both flanks which seemed to shift on movement, but this was not very definite. Ballance's sign was not tried. There was slight distension and fullness in the region of the umbilicus and lower abdomen. Nothing was felt in the pouch of Douglas, but there was a fullness anterior to the cervix. There was no history of stomach trouble, and the menstrual history was quite normal, the last period being one week previously. The urine, when tested in the side room, was found to reduce Fehling's solution, and a rough estimation gave a reading of 4 per cent. Owing to the urgency of the case this point was not further investigated. There was no blood, pus, or albumin present.



No definite diagnosis was made beyond internal hæmorrhage.

At operation, 11 P.M., a mid-line suprapubic incision was made, and the abdomen was found to be full of blood.

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[1] Bailey, Hamilton: Brit. Jour. Surg., 1930, xvii., 417.
[2] Susman, M. P.: Ibid., 1927, xv., 47.

A rapid examination showed that uterus, tubes, and ovaries appeared to be normal. A fresh mid-line incision, above the umbilicus, showed that the hæmorrhage was due to a rupture of the spleen. The incision was carried in a transverse direction and the spleen was removed. The operation was one of considerable difficulty owing to adhesions of the great omentum around the organ. As much as possible of the blood and clots was removed from the abdomen, and the wound closed. An intravenous gum saline was given immediately afterwards.

The patient's pulse-rate continued to rise throughout the night and a blood transfusion was performed by the citrate method early next morning, with a temporary improvement in the condition. Up till this time the case was thought to be one of spontaneous rupture of the spleen, but when the patient was questioned more closely she said that a fortnight previously she had received a blow on the left side in the small of the back, just below the ribs. The blow brought her to her knees, and she spent a sleepless night with the pain, which also persisted through the next day. After that, however, she felt quite all right, and indeed went on foot to a skating rink with a friend and had no further trouble until the day of her admission to hospital.

The patient's condition remained the same throughout the day, but became worse during the following night, and a second blood transfusion was carried out in the early hours of the following morning, again producing a temporary improvement. This was not maintained, and the patient died at 6.30 P.M.

A post-mortem examination was made by Dr. H. A. Cookson, pathologist to the Sunderland Royal Infirmary, to whom I am indebted for the following description and photograph of the spleen.

All the organs, both in the chest and abdomen, were pale but healthy. There were no fractured ribs. The spleen, which was removed at operation, weighed 4½ oz. The large axis measured 4¼ in., and the transverse axis 3½ in. There was a transverse tear 2 in. long on the convex surface. Apart from injury the organ showed no evidence of disease. A large hæmatoma had taken place under the capsule and this had ruptured. It is interesting to note that organisation of a portion of the hæmatoma had taken place.

I am indebted to Dr. Hamilton Ross, honorary surgeon to the Sunderland Royal Infirmary, for permission to publish an account of this case.

A CASE OF INTRACRANIAL TUMOUR.

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THE patient, a single woman of 30, presented herself at the out-patient department of the Royal Northern Hospital on August 14th, 1930, and was seen by one of us. She complained that for the previous six weeks she had been suffering from headache, which was getting worse, and which had kept her in bed for ten days. The pain was described as "bursting" and was felt at the back of the head, a pain also radiating up the back of the neck. She gained temporary relief by rising from the recumbent to the erect position, but only very recently had she experienced the pain on waking in the morning. The back of the head was sensitive to pressure. There was weakness of the legs after an attack of headache. She had once lost consciousness.

A provisional diagnosis of hysteria had been made outside, and the general aspect of the woman certainly agreed with this suggestion. Routine examination of the nervous system revealed only two abnormal conditions, a myopic left eye with old choroido-retinitis, and a patellar clonus on the left side. Inquiry about the eye condition elicited the fact that an eye specialist had recognised it six years previously but had not made any further test and had not advised any general treatment. No stigmata of congenital syphilis were present. Both on general grounds and on the strength of the choroido-retinitis a Wassermann test was ordered, but unfortunately it was not carried out owing to her failure to attend.

A week later the patient was brought to the hospital in an ambulance and stated that the headache was worse; otherwise her condition seemed as before. A quarter of an hour later she suddenly became comatose and respiration ceased. It was therefore obvious that the respiratory centre had failed, the other medullary centres remaining, for the time being, unaffected. A provisional diagnosis of tumour in the posterior fossa was made. To prolong life an intratracheal catheter was passed and attached to an oxygen supply; the colour remained good and the heart continued to beat in a normal manner without any artificial respiration. It was considered advisable to obtain a small quantity of cerebro-spinal fluid for examination to exclude subarachnoid hæmorrhage. Therefore, at the risk of increasing the medullary pressure cone, a small quantity was withdrawn by lumbar puncture. The fluid was perfectly clear, so that the diagnosis of tumour remained. Surgical opinion was against any decompression operation.

Twelve hours after her collapse the patient died, the pulse gradually failing, and the temperature falling to 95°. The intratracheal oxygen was continued until death.

Post-mortem Examination.—The body was that of a healthy looking well-nourished female. The brain (weight 43 oz.) showed an area of softening in the right frontal lobe at the frontal pole, some two inches wide and extending to at least two and a half inches depth in the brain substance. The dura mater was adherent to the brain, and connected with it was a firm tough piece of yellowish tissue about half an inch in diameter; no line of demarcation between this tissue and the brain substance could be demonstrated. The other parts of the brain showed no abnormality, except that there was a small but definite pressure cone. Section showed the tissue to be a gumma.

The very small quantity of cerebro-spinal fluid withdrawn shortly before death yielded a strongly positive Wassermann reaction. The cells did not exceed one (lymphocyte) per c.cm.

COMMENTARY.

Gumma is a comparatively rare form of intracranial tumour. In Cushing's series of 1398 cases, syphiloma accounted for 13, or just under 1 per cent. Starr[1] collected 22 gummata in 600 intracranial tumours, or 3·67 per cent., only two of the patients being under 18 years of age. He therefore concluded that intracranial gummata were rare in childhood and never resulted from congenital syphilis. Hoppe agrees that they are practically never found in children. Clark found gumma in 6 per cent. of intracranial tumours. Tooth, on the other hand, found none in 258 cases of tumour. All authorities agree on the rarity of intracranial gumma in children and that the acquired infection is nearly always responsible.

In this case the tumour itself, being situated in a silent area, produced no signs or symptoms until six weeks before death, when presumably the onset of œdema and softening began to cause an increase of intracranial pressure. Death seven weeks after the first symptom is an unusually rapid course in intracranial tumour. The presence of increased pressure was suspected solely from the character of the headache, and gumma suggested itself on account of the old and quiescent choroido-retinitis.

The situation of the tumour conforms to what is usual—namely, that in its origin the gumma is generally superficial and usually at the convexity of the brain (Gowers). The tumour may start as an osteitis or periostitis of the skull, or may take origin in the meninges.

The Wassermann reaction in the cerebro-spinal fluid is not necessarily positive, as it was in the case described. In the case reported by D'Aunoy, Friedrichs, and Zoeller[2] the W.R. was negative in the cerebro-spinal fluid and positive in the blood. Seeing that gumma is due to localised infection of the meninges and not to an infection of the parenchyma of the central nervous system, there is no reason to expect a positive reaction in the fluid. A coincident specific meningitis may, however, produce a positive reaction in the fluid by permitting leakage of the Wassermann substance from the meningeal vessels. As in all cases of tertiary syphilis, the blood Wassermann may be negative, so that a negative test in both blood and fluid is not an absolute bar to the diagnosis of intracranial gumma.

It is evident that no treatment could have saved this patient at the time that she first attended the hospital. But if the specific nature of the choroidoretinitis had been recognised six years previously appropriate treatment would probably have prevented a fatal result. It was admittedly hazardous to withdraw fluid by lumbar puncture, thereby inevitably increasing the pressure cone through the foramen magnum, but it was considered justifiable in the circumstances. Cisternal puncture was considered first but was regarded as impracticable in this case, as the cisterna magna would be compressed by the pushing down of the cerebellum and medulla, so that the needle might have injured the latter.

This case again illustrates that intratracheal oxygen is not only a substitute for artificial respiration but is also more efficient, and will keep the blood fully oxygenated as long as the circulation is maintained.

We are indebted to Dr. C. C. Beatty for permission to publish this case.

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MEDICAL SOCIETIES

HUNTERIAN SOCIETY.

AT a meeting of this Society held on March 2nd the chair was taken by Prof. A. W. SHEEN, the President, and the Hunterian Oration on

Surgical Aspects of Diverticulitis

was delivered by Mr. A. E. MORTIMER WOOLF. Diverticulitis, he said, was not unknown to John Hunter; the Hunterian collection contained a specimen originally labelled "colitis" but now relabelled "diverticulitis." The first real description of the disease had been given in 1849; early writers had held that diverticula of the large intestine were true herniæ through muscular gaps caused by dilated vessels. There were, however, objections to this view. If the condition were due to internal pressure—notably that of constipation—it would not be expected to occur more frequently in men than in women, as it actually did. There was something much more fundamental about the cause, and Mr. Woolf had therefore followed John Hunter in turning to comparative anatomy for its elucidation. Diverticulitis had been described in a series of pit-ponies (all but one Icelandic ponies) all showing emaciation and debility and a thickened intestine. The condition in the horse, however, occurred in the small intestine, though it was rare in the small intestine of man. Sections showed great hypertrophy and segmentation of the muscular coat, large vessels in the gap and the diverticulum coming through between the segments—the same picture as in man. Serial sections of one equine case had shown two diverticula, one of which had come right through the bowel and convoluted until it overlapped the second.

In the developing chick the muscle was seen to be laid down in segments with wide spaces between them. The muscle of the intestine was not therefore originally developed as a continuous sheet. The hypertrophy was clearly an important factor. Muscle hypertrophied only in response to a nervous stimulus, not as a result of hyperæmia. The dilated vessels were therefore the result and not the cause of hypertrophy. It seemed permissible to suggest that the essential fault in diverticulosis was a disturbance of the neuromuscular system of the intestine. Keith had shown in the ileo-cæcal valve of the rat cells which were neither muscle nor nerve, and had called them "nodal" in comparison with the neuromuscular mechanism which controlled the heart. In diverticulitis there seemed to be a neuromuscular dysfunction of the rhythmical contraction of the segments of the large intestine. Eventually, a little piece of mucous membrane was caught up, or even intussuscepted into the widened gap between the muscular bundles. This might be the origin of intussusception in the young child. The only point against this explanation was that diverticula might have perfect mucous linings, which seemed unlikely if the mucous membrane had been nipped and extruded. This opened up the possibility of congenital isolation of islands of hypoblast.

SYMPTOMS.

The initial symptoms were those of early dyspepsia such as that associated with disorder in any abdominal organ. They specially resembled the symptoms of cholecystitis—irregular dyspepsia, flatulence, and obesity. From the surgical aspect the symptoms depended entirely on complications due to the retention of fæcal material within the enlarged lumen. The first symptom might be a sudden catastrophe such as perforation. A common prodromal symptom was pain when the bladder was full caused by adhesion to the bladder. A fistula might be almost the first symptom; in one case three segments of a tapeworm had been passed per urethram. There was usually palpable thickening of the sigmoid. In the early stage thickening was due to hypertrophy of the muscle; in the late stage it was due to a true inflammation—the condition known as perisigmoiditis. The differential diagnosis from carcinoma might be exceedingly difficult. The general condition was not of much diagnostic value. The tumour of diverticulitis was larger, longer, and more variable than the small, hard, and craggy tumour of carcinoma. When obstruction had supervened, the diagnosis was even more difficult, but the two could be distinguished. In diverticulitis the obstruction was hardly ever absolute, never quite so urgent as in a malignant case; there was usually a long history of periodic or of febrile attacks and a leucocyte count might suggest inflammation. The treatment of diverticulitis was never urgent; the obstruction would subside with rest in bed, fomentations, and starvation. When in doubt, however, it was better to operate than to wait too long.

Abscess formation might occur anywhere where there were diverticula, but was usually in the sigmoid. If left alone the abscesses might perforate. Operation was difficult, as adhesions had to be separated. Sometimes an abscess would cause a fistula into vagina or bladder The result was always passage of fæces per urethram and never, for some unknown reason, of urine per rectum. Multiple abscesses might be found; this was a very grave condition. Diverticula might become strangulated or intussuscepted.

DIAGNOSIS AND TREATMENT.

The great thing in diagnosis was to keep the disease in mind, though precise diagnosis was often impossible. No reliance should ever be placed on a barium meal, but an opaque enema was of real assistance. An emptying picture as well as a filling picture must be obtained, and in cases of doubt a series of pictures should be taken. The pre-diverticular stage (stage of hypertrophy) showed a spiky appearance of the fæcal mass and above that a loss of haustration, so that the fæces formed a solid column.

The best rule was to abstain from operation if possible. Only the surgical complications should be surgically treated. Resection involved a very great risk; anastomosis was difficult in the lower sigmoid and the work had to be done on damaged gut. If he must resect, the surgeon should do it in two stages. For obstruction the best operation was to attach the intestine to the skin and make a small longitudinal opening in it which would close naturally as the obstruction disappeared in a few days. If colostomy was afterwards essential the opening would have to be closed later. "Pauchet's operation" of patching the colon with a piece of small intestine had first been done by W. S. Fenwick at Charing Cross Hospital before the war.

DISCUSSION.

Sir Charters Symonds congratulated the orator on his address.

Mr. J. P. Lockhart-Mummery said that he did not think the ætiology of diverticulitis had ever been satisfactorily explained. The tempting explanation was pulsion herniæ, but the pressure within the intestine appeared to be the same as the pressure outside. The vast majority of the patients were fat; often they had been healthy and athletic in youth. Muscle tended to turn to fat in age and lack of exercise, and he was sure that there was a fatty degeneration of the circular fibres which allowed the mucosa to bulge between them. The vessels caused weak points where diverticula were likely to occur. The treatment was to leave it alone if possible, but if there must be an operation it should be colotomy. Wrapping omentum round the damaged portion of bowel was very satisfactory for early cases. Resection also might be suitable for cases of obstruction where there was dense fibrosis in a small area.

Dr. Graham Hodgson showed radiograms illustrating the necessity for oblique as well as antero-posterior views. Two photographs on the same plate at intervals of ten seconds showed a double outline due to peristaltic wave; where there was fibrosis the double shadow was not seen. When the diverticula were homogeneously filled by the barium enema it meant that the douche could empty them and the prognosis was therefore better than when only small patches of bismuth were seen in the diverticula.

Dr. Scott Williamson said that the primary lesion was hypertrophy and not inflammation. There were two definite conditions behind it: a neuromuscular congenital disposition associated with fat deposition which had laid the segments further apart than normal, and secondarily a process of herniation of mucosa.

Mr. W. H. Ogilvie said that diverticulitis was one of the few diseases standing between surgeons and complete mechanisation; it defied standardisation; each case was a fresh problem, and the first operation was nearly always a life-saving measure. It was one of the few remaining conditions in which really heroic surgery was justified. The aseptic method of anastomosis was a very great technical advance.

Dr. Campbell McClure quoted two cases in which diverticulitis had been preceded for many years by obstinate sigmoid spasm, and suggested that the nervous spasm might have something to do with the production of hypertrophy.

Mr. C. P. G. Wakeley described two small diverticula found in a human embryo of 19 mm.; this supported the congenital ætiology. The whole condition would often disappear if tension were relieved by opening an abscess.

The Chairman mentioned the use and abuse of the sigmoidoscope and Mr. Woolf replied.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

At the meeting of this Society at Manchester on Jan. 23rd the chair was vacated by Dr. J. W. Burns (Liverpool) and Mr. W. W. King (Sheffield) was installed as President. A paper on

Vaginal Hysterectomy

was read by Dr. S. B. Herd (Liverpool), who began by pointing out that little support for the operation was to be found in gynæcological text-books, some being frankly antagonistic. The present communication was based on a series of 50 cases. As a rule the vagina was prepared by hyperchlorite packs and douches for two days before operation. The cervix was closed by three or four silk sutures which also acted as tractors. The utero-vesical and Douglas's pouch were opened in the usual way. Early ligature and division of the utero-sacral ligaments was desirable to give greater mobility, after which it was easy to work up the sides and secure the uterine arteries. Dr. Herd had not found it necessary to bisect the uterus or remove fibroids piecemeal. The appendages could be removed with the uterus or dealt with separately where removal was advisable. All stumps were fixed to the vault with their cut surfaces projecting into the vagina after partial closure of the peritoneal cavity. In cases of prolapse, vaginal repair was combined with hysterectomy. The contra-indications were carcinoma of the body or cervix, inflamed appendages, fixation of the body or uterine enlargement out of proportion to the vagina including nulliparity. In the cases reported only six patients were under 40, the average age being 44 and the average stay in hospital after operation 17 days. Four were cases of carcinoma, and these did not do well. Of the remaining 46, 43 made excellent recoveries. There was one death from broncho-pneumonia, one case of hæmorrhage on the tenth day controlled by packing, and one case of pyelitis. The most noteworthy feature of the cases was the absence of shock and the rapidity of recovery.

The President, Mr. A. Gough, and Prof. Miles Phillips spoke strongly in favour of the method, Prof. Phillips remarking that no gynæcologist had the right to call himself a gynæcologist who did not choose this route in as many cases as possible.

The Ovary during Pregnancy.

Dr. R. Newton (Manchester) read a preliminary communication on the appearance of the ovary during pregnancy. In October, 1928 he said, Prof. D. Dougal described small, rust-coloured areas on the surface of the ovaries as noted during Cæsarean section. Dr. Newton had looked for these since in a series of Cæsarean sections and had found them always present in both ovaries. He described the methods of fixing and staining employed and demonstrated the microscopical findings in several specimens he had obtained. These rust-coloured areas he found to consist of groups of decidua-like cells lying at varying depths in the cortex, but always with at least three or four layers of cells separating them from the surface. They were apparently in every respect similar to decidual cells. They were large, oval, with faintly granular protoplasm and a prominent nucleus, lying in a loose matrix, with fibrils running between the cells. The presence of glycogen was demonstrated by Best's carmine stain. Dr. Newton emphasised that he had not found any of these areas absolutely on the surface of the ovary, nor had he been able to find glands present in these decidual group of cells.

A number of cases and specimens were described or shown.

LIVERPOOL MEDICAL INSTITUTION.

At a meeting of this Institution on Feb. 5th a paper on the

Early Diagnosis of Pregnancy

was read by Dr. M. M. **Datnow**. After speaking of various investigators who had attempted to elaborate tests for the early diagnosis of pregnancy (Liepman, Abderhalden, and Fahraeus), he pointed out the great superiority of the method of Aschheim and Zondek, which gave 98 per cent. of accurate results. Moreover, the consideration on which this test was based might be a starting point for investigation of many sex problems. Apart from normal pregnancy, positive reactions were given by hydatidiform mole, chorion-epithelioma, ectopic gestation and, in a few cases, malignant disease.

Dr. T. N. A. **Jeffcoate** said he agreed that the Aschheim-Zondek test was very reliable. The question of the origin of the hormones was very interesting, and of late some observers had tended to believe that the hormones found in the urine in pregnancy were derived from the placenta rather than the anterior pituitary. Dr. Jeffcoate had recently studied a case of pregnancy in which both ovaries had to be removed at the sixteenth week. There was no change in the amount of œstrin in the urine after operation, and this suggested that the placenta rather than the ovaries was the chief source of the œstrin excreted in the urine during pregnancy. The solution of the problem of the origin of prolan A and B was more difficult, since animal experiment was excluded by the fact that the urine of pregnant animals did not give the reaction. Prolan A was found in the urine of women after castration, at the menopause, and in some cases of carcinoma; the occurrence of this hormone in the urine in these conditions did not, however, affect the reliability of the test as used in the diagnosis of pregnancy, since it was present in much smaller quantities. If the investigator was given the clinical data as a guide it was possible with the Aschheim-Zondek test to be correct in the diagnosis of pregnancy in almost 100 per cent. of cases.

Dr. A. A. **Gemmell** sounded a warning note against accepting the test as always accurate. In a very limited number of cases he had had two in which the test performed by the pregnancy diagnosis station at Edinburgh was incorrect. The test was not a test for pregnancy but for the presence of living chorion, and its reported result must be carefully considered in conjunction with the clinical findings.

Abnormalities of the Hyoid Arch.

Mr. T. **Guthrie** read a paper on Two Abnormalities of the Hyoid Arch. The first consisted in the presence, on both sides, of a complete articulated chain of bones, forming the second visceral arch, and corresponding to the condition found in many of the lower animals, such as the dog. The condition was evidently atavistic, and was interesting from a morphological point of view. It caused no disability, but radiograms showing it had occasionally been misinterpreted. The second abnormality was an excessive development of the styloid process, the lower end of which sometimes projected under the mucous membrane of the lateral wall of the pharynx, in the region of the lower pole of the tonsil, and caused discomfort on swallowing and talking. Complete relief in these cases followed removal of a sufficient length of the bone with or without the corresponding tonsil. This abnormality was probably much more common than the first and unrelated to it. It appeared to be due not to atavism, but simply to excessive ossification of the stylo-hyoid ligament. Unless borne in mind and looked for, the condition was apt to be missed, and the patients' complaints to be regarded as of nervous origin.

Output of the Diseased Heart.

Dr. Isaac **Harris** read a paper on Cardiac Output and Oxygen Utilisation in Heart Disease. Data were collected, he said, from different types of heart cases in regard to consumption of oxygen, output of CO_2, the patient's reaction to exercise, oxygen requirement, oxygen debt, CO_2 and oxygen in venous blood, cardiac output, heart-rate, and number of respirations. Cardiac output was determined by the CO_2 method. Determinations were undertaken under resting conditions and after standard exercise. The investigation showed that under resting conditions oxygen consumption, with a few exceptions, was normal. The percentage of oxygen utilisation, with exceptions, was normal too. So also the cardiac output. Exceptional cases which show an abnormally small output gave an abnormally high percentage of utilisation, the two conditions standing in inverse ratio to each other. The size of cardiac output broadly stood in some relation to the amount of oxygen consumption, but a case in which the cardiac output was large and oxygen consumption moderate gave a low hæmoglobin percentage, the large output evidently compensating for a poor carrying capacity of oxygen of the blood. The cardiac output was increased to a much smaller extent in heart cases after a standard exercise in comparison with normal cases; whilst the percentage of oxygen utilisation had greatly increased in the diseased heart after exercise, the percentage of utilisation remained the same in the normal heart under resting and working conditions. Thus oxygen utilisation and output stood in inverse ratio to each other. This constituted a very important factor in estimating cardiac reserve power. Further, the oxygen consumption as the result of work in heart cases was greatly increased above normal, and the time before the oxygen consumption became normal again was greatly prolonged. The CO_2 content of the blood in heart cases under resting conditions was lower than normal. This was contrasted with oxygen saturation, which was practically normal in all these cases. Stroke volume increased after exercise in the diseased heart to a less extent than in the normal; in an advanced case of heart disease it did not increase at all. The reaction of stroke volume to exercise was a definite measurement of cardiac reserve power. The diseased heart increased its minute volume by increase of number of beats, the normal heart by increasing the size of the single stroke volume. The importance of this method was so great, said Dr. Harris, that the Liverpool Heart Hospital had created a special department for routine examination of suitable cases.

MANCHESTER MEDICAL SOCIETY.

A MEETING of this Society on Feb. 4th, with Mr. J. HOWSON RAY, the President, in the chair, was devoted to the

Treatment of Toxic Goitre.

Dr. J. CRIGHTON BRAMWELL, discussing the relative merits of surgical and non-surgical methods of treatment in primary and secondary Graves's disease, concluded that at present surgical treatment was the method of choice in the more advanced cases, but thought that in the future earlier diagnosis would render most cases of primary Graves's disease curable by medical means.

Mr. JOHN MORLEY based his remarks on a series of 120 cases of primary exophthalmic goitre and 72 cases of toxic adenoma on which he had operated. The mortality in the former group was 5 per cent. and in the latter group 6·9 per cent. The tendency in and around Manchester to refer only the more severe cases to the surgeon inevitably involved a somewhat higher mortality than was found in surgical centres where all cases, including the mildest, were treated by operation. The cause of death in most cases was myocardial weakness. The end-results of operation had been assessed by a questionaire on increase in weight since operation, continuance of palpitation, and ability to resume normal work. This was supplemented by personal interview when possible. The results of this investigation were tabulated as follows:—

	Very Good.	Good.	Moderate.	Poor.
Primary exophthalmic goitre (97 cases)	60	24	6	7
Toxic adenoma (54 cases) ..	38	13	2	1

While there was general agreement that all cases of toxic adenoma or secondary toxic goitre should be operated on without undue delay, there was still much difference of opinion about the indications for X ray treatment or operation in primary exophthalmic goitre. Mr. Morley believed that X ray treatment gave the best results in the less severe cases with small goitres. In such cases he favoured a course of X ray treatment lasting three months, rigidly controlled by the effect on weight, pulse-rate, and basal metabolic rate. If at the end of this test period there was no really striking improvement, he thought it wiser to advise operation at once, in order to relieve the strain on the heart muscle. A third of his cases of primary exophthalmic goitre had been treated without success by X rays before they came to operation. One patient who had undergone intensive X ray treatment developed tetany after operation, but it was found on going into her history again that she had noticed similar attacks of tetany for four months before operation. This suggested that the X rays had damaged the parathyroids. The effect of iodine medication was usually transient, and often the early favourable effect of iodine on the pulse-rate could not be repeated. Mr. Morley pleaded that iodine should be reserved as a powerful safeguard for the patient in the fortnight or so before operation. An adequate period of pre-operative rest, with the closest coöperation with the physician in the treatment of the heart by digitalis, contributed largely to the safety of operation. Though general anæsthesia by gas and oxygen was safe in an average case, Mr. Morley expressed a growing preference for local anæsthesia in the more severe cases, and regarded it as especially necessary in cases with auricular fibrillation. While operation was not the last word in the treatment of exophthalmic goitre, in the present state of our knowledge it must be regarded as the most rapid and most efficient form of treatment available.

Dr. E. D. GRAY reviewed in detail the results of medium voltage X ray therapy in 99 cases of toxic goitre treated at the Manchester Royal Infirmary during the year 1928. In his opinion, X ray therapy was a valuable form of treatment in cases of exophthalmic goitre without visceral complications and a four months' trial was indicated, provided the patient was able to attend regularly and had a reasonably comfortable home. If careful records of the symptoms, pulse-rate, and weight were kept, it was usually possible at the end of this period to decide whether X ray treatment would be successful in a particular case. A perfect functional result was obtained in 50 per cent. of the cases of exophthalmic goitre in this series and a further 33 per cent. were markedly improved. X ray therapy had also something to offer in cases of toxic adenoma, for with a larger course of treatment, good palliative results were frequently obtained. Until it were proved that patients suffering from this type of toxic goitre inevitably developed cardiovascular damage in the course of time, X ray treatment could be recommended if operation was undesirable.

ST. LUKE'S HOSPITAL, BRADFORD.—A £10,000 scheme for the provision of operating theatres at this hospital has been adopted by the Bradford corporation health committee. The proposed block is to contain two operating theatres, each with appropriate accommodation for patients, surgeons, and theatre staff.

ARUNDEL COTTAGE HOSPITAL.—A new hospital is to be erected on the Chichester-road at Arundel in place of the present building which has been found too small for present needs. At the annual meeting of the governors on Feb. 4th, the acceptance of a tender of £9475 was ratified; and a special appeal is to be launched for £3000. Including a gift of £5000 from Miss Kathleen Mitchell, the first appeal brought in the sum of £7145.

DONATIONS AND BEQUESTS.—By the will of the late Mr. F. L. Lucas, of London and Ascot, the Hospital for Sick Children, Great Ormond-street, London, will receive £1000 and a quantity of jewellery: University College Hospital £500, and the London Hospital, the Metropolitan Hospital Sunday Fund, and King George's Hospital, Windsor, £250 each. Several medical institutions will receive smaller sums under the same will.

CHORLEY HOSPITAL.—The income of Chorley Hospital is well maintained. The total income was £4007 compared with £3871 for the previous year and the expenditure £3936 compared with £3466. This satisfactory state of affairs, in a large measure, is due to the success of the workpeople's hospital contributory scheme, the amount handed over being £1800. Motor accident cases spent in hospital 942 days, the cost of their maintenance being £329. Of this latter amount only ten guineas was recovered.

REVIEWS AND NOTICES OF BOOKS

ehrbuch der Protozoenkunde.

Eine Darstellung der Naturgeschichte der Protozoen mit besonderer Berücksichtigung der parasitischen und pathogenen Formen. Founded by FRANZ DOFLEIN. Fifth edition. Revised by Prof. Dr. EDUARD REICHENOW, Departmental Director at the Institute for Marine and Tropical Diseases, Hamburg. Part II. *Spezielle Naturgeschichte der Protozoen.* Second half: *Sporozoa, Ciliata and Suctoria.* Jena: Gustav Fischer. With 378 text-figures. Pp. 398. RM.21.

THIS completes the fifth edition of Doflein's text-ook edited and brought up to date by Dr. Reichenow, wo previous parts having already been noticed. n the final part the editor continues his consideration f the sporozoa and deals ably with the parasites of nalaria and the piroplasmata which are of special nterest to medical men and veterinarians. From hese he passes on to the cnidosporidia which he egards in the orthodox, though perhaps not quite ogical, manner as a subclass of the sporozoa. The inal section deals with the ciliophora. At the end s a good index, together with the title page, foreword, nd table of contents for binding in one large volume, nuch the size of the fourth edition published in 1916.

The book is a valuable contribution to the literature f protozoology, and maintains its previous standard n the excellence and number of illustrations. Its character has changed to some extent, for greater attention is now paid to parasitic protozoa, and on this account it will make a greater appeal to parasitologists. The free-living protozoa have however not been neglected, and the book can be recommended thoroughly to everyone who wishes to have a clear and timely account of the protozoa. Its value as a book of reference is enhanced by a full bibliography.

Scalpel, Sword and Stretcher.

By Colonel ROBERT J. BLACKHAM, C.B., C.M.G., C.I.E., D.S.O. London: Sampson Low, Marston, and Co., Ltd. 1931. Pp. 340. 12*s.* 6*d.*

THIS is a book which from its sheer simplicity defies criticism. Presumably the author has kept a diary for some 40 years of a busy life in which he worked hard, played also, and saw many things under many circumstances; the work is not put into diary form, but only by daily note-taking would it have been possible for anyone to recapitulate, more or less in order, so many things important and unimportant, while the fact that the events recorded are put down next to each other with little attempt at correlation makes the appearance of a diary still closer. The notes cover the period between the entrance of the author into the medical profession on St. Patrick's Day, 1883, and the date in 1920 when he was placed on half-pay; but it may be remarked that Colonel Blackham did not consider that life was closed when his army service was necessarily ended, for he immediately decided to try his luck at the Bar and was called some three years later.

The early chapters dealing with the Ulster counties and the Dublin city of the 'eighties describe manners and happenings that might be taken from the pages of Lever, and if Lever is scorned by real Irishmen as a depictor of Irish life and manners it is a fact that when real Irishmen write of Irish modes and manners their pages are generally reminiscent of Lever. In 1895 Dr. Blackham, as he had just become, obtained a commission by competition in the R.A.M.C., not then elevated to its position as a Royal Corps, and we have many chatty and intimate notes on men and things that interested the new soldier-doctor. The description of Netley at this time will evoke many amusing reminiscences from Colonel Blackham's contemporaries and immediate seniors. After three years' service at Aldershot he received orders to embark for India, and all the middle of the book, in fact until we arrive at the date of the Great War, is concerned with work and play in the Indian Empire. These chapters are punctuated with quotations from Kipling and are imbued with the same patriotic convictions. There are many stories, some good, some trivial, some new, and some old, and there are many pictures most of which serve their proper purpose of illustrating the text in places where illustration is useful.

Some of the most interesting passages in the book, such as the chapter entitled The White Cross and the Red, describe the work of the St. John Ambulance functioning as the National Red Cross of India. To the organisation of ambulance work Colonel Blackham devoted so much attention that one of his chiefs made official complaint on the matter. Before the outbreak of war he had been appointed paid secretary of the Association for a certain term; and it need hardly be said that when the war did break out the ambulance peace organisation became the Red Cross for India. The task of organising the developments was a whole-time job, as anyone must appreciate on reading the details of what was done, and until July, 1915, Colonel Blackham, though employed exclusively on Red Cross duties, must have had his hands entirely full. When in 1915 he went to the front he had completed seven years' service with the St. John Ambulance in India with really fruitful results.

The author describes his war experience in the last 100 pages of the book, and from his brief and picturesque notes we get a good picture of the miseries, hardships, and unsuppressible good humour which marked the conduct of the struggle on the British Western front. The mixture of the entirely trivial and anecdotal with reports of terrible happenings makes a very readable compost, and the author may be congratulated both on a successful professional career and on his readable account of its steps.

Cancer and Scientific Research.

By BARBARA HOLMES, Ph.D., Biochemical Laboratory, Cambridge. With a preface by Prof. F. G. HOPKINS, President of the Royal Society. Sheldon Books of Popular Science, edited by Joseph and Dorothy Needham. London: Sheldon Press. 1931. Pp. 160. 3*s.* 6*d.*

THE object of this little book is to give the intelligent layman an understanding of the investigations which have been pursued and are being pursued into the problem of cancer. As Sir Gowland Hopkins says in his preface, "studies of cancer prove to be studies of the working of nature, though in circumstances which seem to display nature as cruel. All scientific progress is showing, however, that Man can control Nature and bend her to his will. In the following pages is described the united effort to obtain knowledge which will ultimately lead to such control in the case of cancer." The hopes aroused by this introduction are not disappointed on reading the book. In a clear and interesting manner it gives a complete and critical survey of the cancer problem, of the methods by which it has been attacked, and of the progress which has been made. To present such a complex and extensive problem concisely in simple language and to separate the grain from the over-abundant chaff is no easy task, and the author is to be congratulated on her complete success. There is only one point on which most students of cancer will be inclined to disagree with the author—namely, the acceptance of the views of Maud Slye on the importance of heredity in the incidence of cancer. There is no doubt that heredity does play a part in the incidence of cancer, but the extreme views held by Miss Slye on the basis of her breeding experiments are at present not generally shared by other workers in this field. This is an aspect of the cancer problem which is obviously of special interest to the general reader and it would have been better to take note of the criticisms to which Miss Slye's work has been subjected.

We recommend this excellent book to our readers and to the general public.

How to Keep Healthy in the Tropics.

By J. N. DUGDALE, M.B., Ch.B. Edin., formerly Consulting Physician and Surgeon, Liuyang Red Cross Hospital, Hunan, China; Visiting Medical Officer, Bukit Pulai and Associated Estates, Johore, Malaya. Singapore: Malaya Publishing House, Ltd. 1930. Pp. 162. 5*s*.

Dr. Dugdale is not the first who has attempted to describe in simple and popular language the dangers of tropical diseases and the best means of avoiding them. It is difficult to do this without falling into a morass of technicalities which will repel the layman, for whom the information is intended; but Dr. Dugdale has succeeded better than most of his predecessors. The 38 lectures which comprise this book are eminently practical; they include hints for the new-comer; cautions in the dangers of unfiltered water, snakes, and snake-bite; and notes on the causes of indigestion, the importance of vitamins, and the prevention of tuberculosis in the tropics. Many precautions, which appear to the medical eye almost too obvious to mention, will be welcomed by the readers of this book. One or two mistakes have crept into the text. The mosquito-malaria problem was not solved in 1895 (p. 83), nor is it generally conceded that yellow fever is caused by a leptospira (p. 93).

The Vertebræ,

Roentgenologically Considered, including a Study of Industrial Accident Cases. Annals of Roentgenology, Vol. VIII. By A. WELLINGTON GEORGE, M.D., Sc.D., F.A.C.R.; and RALPH DAVIS LEONARD, A.B., M.D. New York: Paul B. Hoeber (Inc.). Pp. 286. $10.

THIS is one of an admirable series of manuals, written by experts, under the general editorship of Dr. James T. Case. The joint authors have already contributed "The Pathological Gall-bladder" to the series. Like its predecessors, the book is beautifully turned out, and the illustrations are of the highest quality. They show well the detail even of such difficult regions as the lower lumbar vertebræ and the sacro-iliac synchondrosis. The general editor is to be congratulated upon his choice of collaborators for this important branch of radiology. Industrial injuries of the spine are among the most puzzling of these that are continually before the courts under the Workman's Compensation Acts. It is largely with these cases in view that the book has been written. The radiographic evidence is often the deciding factor in any case, and in no branch of radiology is interpretation more difficult. Variations from the normal are so common and so misleading that mistakes are almost impossible to avoid.

The table of contents gives a good idea of the systematic and thorough manner in which the authors have done their work. Part I. deals with the subject as a whole, and points out the changes that result from age, posture, and occupation. This is followed by an account of congenital abnormalities, fractures, and diseases. Part II. occupies two-thirds of the volume and is devoted to a detailed study of each section of the spine, with special emphasis on that most important and difficult bone, the fifth lumbar vertebra. Special attention is given to the differential diagnosis of the various possible causes of lower back pain, and both the letterpress and the illustrative cases are of the first value. In view of the fact that so many spinal injuries find their way into the law courts, the appendix on medico-legal expert testimony is helpful. In a few pages the authors give common-sense advice from long experience and, if acted upon, it should save the witness from some of the traps into which the inexperienced are liable to fall.

The authors have succeeded in producing a book which is likely to be the classic book of reference on spinal conditions. It is trustworthy and adequate in every respect.

The Nature of Living Matter.

By LANCELOT HOGBEN. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1930. Pp. 316. 15*s*.

Prof. Hogben was the protagonist for the mechanistic outlook in the symposium on the nature of life held by the British Association in South Africa in 1929. He here expands his contribution and, with accomplished pen, which has made his book longer than it need have been, argues enthusiastically against the methods of interpretation represented in the main by Haldane, Smuts, and Eddington. He really settles the case in favour of his thesis by ruling that nothing can be scientific knowledge which cannot be expressed in mechanistic terms, and that biology is not concerned with anything but science. He divides knowledge into two classes: "public" knowledge which can be expressed in precise and definite terms and is communicable from one person to another, and "private" knowledge which has no clear language for its formulation and so cannot be passed directly from one mind to another. Science takes notice only of "public" knowledge and therefore can have nothing to do with, e.g., the experiences of love or religion which certainly cannot be precisely stated or communicated but which form, as Eddington would say, some of the most real facts of life which it is impossible to exclude from any attempt at explanation. The argument is clear and as far as it goes convincing, though obviously it will have no influence on opponents; they start from quite different premises as to the content of living matter if indeed they admit that life exists in anything but organisms. We wonder, by the way, whether Sir Charles Sherrington would agree (p. 308) that his public values in "The Integrative Action of the Nervous System" are really so different from the private values which emerge in "The Assaying of Brabantius."

THE LANCET.

LONDON: SATURDAY, MARCH 7, 1931.

THE TESTING OF DRUGS.

Five years ago pharmacological laboratories were opened under the direction of Dr. J. H. Burn at the house of the Pharmaceutical Society of Great Britain in Bloomsbury-square, London, with the three-fold aim of standardising such medicinal substances as cannot be adequately tested by chemical means, of prosecuting research work upon biological standardisation, and of training pharmacists in pharmacological methods of assay. The fifth annual report, issued to-day, epitomises with becoming modesty the work of these laboratories during 1930, and affords substantial evidence that the Pharmaceutical Society is keeping pace with recent advances and changes in the treatment of disease. It affords, too, a practical proof, if proof were needed, of the desirability of close contact between doctor and pharmacist at a centre for the testing of commercial products as to strength, purity, and therapeutic activity.

The need for such an institution will be apparent to all. The progress of endocrine therapy from speculative theory to concrete clinical application, the legitimate claims of vitamins as therapeutic agents, and the establishment of the biological assay of certain potent medicaments place a new responsibility upon the pharmacist, who can no longer content himself with the proverbial dispensing of pills and potions. The physician demands drugs of clearly defined strength, quality, and potency, a claim recognised by the legislature when it introduced the Therapeutic Substances Act (1925) to prescribe (as occasion should arise) such stable standards of activity as are requisite for accuracy and safety in therapeutics. The pharmacologist, once he has produced and investigated a new therapeutic entity, cannot stop in his stride to devote his time to routine testing and standardisation. In the past, notably in connexion with the official galenicals, the onus of this duty has been placed upon the pharmacist by national pharmacopœias, and it is certain that in the future this practice will be continued and extended. Chemical standardisation of drugs, although desirable from the point of view of accuracy, is not always feasible, and the adoption of a biological method is essential in an increasing number of instances where the activity of a drug can only be controlled and regulated by defined physiological tests. Adrenalin, pituitary extract, and insulin are three outstanding examples of the change whereby the erstwhile prerogative of the medical research laboratory has been handed over to the skilled pharmacist to use on a larger scale in the world of commercial production. Progress, however, does not consist solely in the discovery of the new, but equally in the perfection of the old, and in the pharmacological field there is need and room for research in connexion with galenicals which have become commonplace through daily use. The past work of the Pharmaceutical Society's laboratories amply confirm this. Generations of medical students and midwives were taught that the official liquid extract of ergot being oxytocic should rarely be used before the completion of the third stage of labour owing to the risk of inducing tonic uterine contraction. Biological assay cast doubt upon this teaching, but it remained for Dr. Burn, in conjunction with Mr. Aleck Bourne, of Queen Charlotte's Hospital, to settle all controversy. These workers proved conclusively that the pharmacopœial extract does not contain the specific alkaloid of ergot, and depends upon the presence of tyramine and histamine for any action it possesses. The tendency in treatment as in diagnosis is towards precision. In dealing with potent drugs the requisite precision is attainable only where accurately standardised preparations are used. In the case of the inorganic salts, most of the synthetic organic compounds, and those vegetable or animal products from which the active principle can be readily isolated, standardisation is relatively simple. It is otherwise where the active principles are unknown or unobtainable in a state of chemical purity, and here the availability of physiological standardisation is of prime importance. The U.S. Pharmacopœia has led the way in prescribing certain criteria in a few instances. In this country the Therapeutic Substances Act and the work of the International Conference on Biological Standards have paved the way for the new British Pharmacopœia. Uniformity of potency and dosage must have respect to a given standard, but this can only be put upon a scientific basis by international definition of the basic unit, as has been done by the Geneva Conference in the case of pituitary extract. Where no standard has been fixed, or where there is no general consensus of opinion as to the suitability of a given standard, it is necessary to have some centre provided with such staff and equipment as can produce satisfactory tests for assay and which is at the same time in a position to postulate a reasonable average of potency to which preparations of variable activity should conform. It seems to us that the Pharmaceutical Society, by means of its pharmacological laboratories, has gone a long way to meet these requirements and to bring nearer the cognate arts of medicine and pharmacy. It may be recalled with complacency that just 100 years ago a correspondent signing himself "Pharmacopolus" proposed in our columns the foundation of a pharmaceutical society to include both doctors and pharmacists.

The report before us deals with the research studies of its two departments during the past year, and in an appendix there is a list of publications, 14 in all, upon which the report is largely based. In the pharmacological department the stability of the tinctures of digitalis, strophanthus, and squill, of infusion of digitalis B.P., and of the salts of ergotoxine and ergotamine has been studied. While no deterioration was detected in the tinctures of strophanthus and squill, the tincture of digitalis steadily deteriorated until at the end of 18 months only two-thirds of the original activity remained. Interesting results were obtained with the B.P. infusion of digitalis. Although this preparation decomposed within a few days the active principle remains, and if decomposition be prevented by the addition of chloroform or thymol the potency is unchanged after three weeks. Estimations of percolates of different samples of ergot indicate that extraction of the specific alkaloid is slow, and the preparation of a liquid extract of given strength requires careful adjustment of the percolation process. Ergotoxine ethanesulphonate was found to be relatively stable over a period of two years, but samples of ergotoxine phosphate and ergotamine tartrate deteriorated markedly. On the more strictly pharmacological side investigations were made into the action upon the uterus of anæsthetics and other drugs used in labour, the pharmacological actions of tyramine, and the toxicity of commercial samples of mercurochrome. In the last study astonishing differences were discovered; the most toxic preparation, it is stated, was 37 mg. per kg., the least toxic 140 mg. per kg. These figures indicate, Dr. BURN remarks, that a doctor might buy a preparation nearly four times as toxic as that previously used without knowing the difference.

From the nutrition department of the laboratories it is recorded that a standard for vitamin D similar to that of the Pharmaceutical Society has been adopted by the Medical Research Council. It is pointed out that irradiated ergosterol must be kept in an ice-chest to prevent loss of potency. A brief outline is given of the methods whereby the stability of the standard for vitamin D was investigated—viz.: (1) the estimation of the curative effect of vitamin D on the epiphyseal line in experimentally rachitic rats; and (2) a prophylactic test. The ratio of the percentage of ash to the percentage of organic matter exclusive of fat (conveniently known as the A/R ratio) was calculated for each bone examined. Some progress has been made in the laboratories in the determination of vitamin A, a provisional "standard" cod-liver oil being obtained whereby the relative potency of other samples may be tested and expressed as a percentage of the potency of the standard. Not the least instructive item in this report is the statistical account of the samples tested during the year, for which fees had been paid. Of 142 samples dealt with by the pharmacological department, 47 comprised digitalis, 35 pituitary extract, 28 ergot, and 13 squill. In the nutritional department, the 122 samples examined included 70 tests for vitamin D and 35 for vitamin A.

The possibilities of such laboratories as these are great. To the manufacturer they provide a neutral skilled opinion as to the efficacy of his products. The medical profession, remembering that the General Medical Council, the Medical Research Council, and the British Medical Association approved of the establishment of the laboratories, may expect with confidence that preparations carrying the Pharmaceutical Society's certificate will conform to certain standards of potency, the limits of which should become narrower as experience matures.

THE PANEL PATIENT AT HOSPITAL.

AT a recent meeting of the Scottish Branch of the British Hospitals Association held in Glasgow, Mr. NIVEN MCNICOLL, of the Scottish Department of Health, alluded to the difficulties felt by insurance practitioners in obtaining information about the treatment of patients whom they had referred to hospital. It had, he said, been alleged on the part of hospital authorities that the insured patient is not infrequently dumped on the hospi- with a panel practitioner's card and a line scribbled on the back, or with even scanter courtesy. The hospital felt that it was entitled to a note from the practitioner, stating something about the case and why it was referred to hospital. The panel practitioner on the other hand was apt to complain that after referring a patient to hospital it was the last he heard of the case. It was to deal with this situation that National Health Insurance form M.R. had been drafted for the use of panel and hospital to record information for their mutual benefit. Mr. MCNICOLL added that a regulation would be issued shortly by his department, making it an obligation upon every insurance practitioner, under his terms of service, when he sent a patient to hospital to fill in form M.R. stating the nature of the illness and for what purpose the patient was being referred. In return the department hopes to arrange for the hospital to report to the practitioner on what has been done in the way of diagnosis and treatment. It is understood that some of the voluntary hospitals in Scotland view the proposed form with disfavour. Hospitals, it was argued at the meeting, should be chary in putting down information on such a form when they do not know whether it is treated as confidential or not. As a number of hospital boards were still considering their attitude to the scheme no decision was reached at the meeting.

It certainly seems as though Scotland has stolen a march on insurance medical practice in England by getting this measure of reciprocity, although even here there are indications of a better understanding between the voluntary hospitals and the insurance service. At present it may be broadly stated that the general practitioner service gets no reports from hospitals. Some members of hospital staffs actually dislike sending any report of insured persons who have been under their care in hospital, although they are willing to give their personal opinion of the same patients when sent to them with a personal letter from the practitioner. As a matter of fact the record envelope often does contain a specialist's opinion. It is perhaps hardly to be expected that the furnishing of a report by the hospital authority can be made a definite condition on a hospital which does not accept any governmental grant. So long as this is the case the panel service must depend on the courtesy and enthusiasm of certain members of hospital staffs, than which nothing could be more exemplary; but some general understanding would be a distinct step forward in linking up the hospitals with the national insurance system. Even in Scotland the arrangement has come with a certain shock of novelty and has evoked some resentment on the part of hospital staffs and managements. The latter no doubt fear the expense and trouble of the additional clerical work involved, although the mere cost may well be offset by a saving of unnecessary references to hospital and of unnecessary treatment in hospital. It is in fact the feeling of the Scottish department that when the procedure is well established it may result in the more frequent treatment of the insured person by the practitioner instead of at the out-patient department of the hospital.

How far arrangements of this kind have already been made locally and informally it would not be easy to determine. Some time ago the Paddington Medical Society, following a lead given by the London Public Medical Service, designed a leaflet for the use of panel practitioners when referring patients to hospitals. It was thought that the introduction of such a leaflet would tend to encourage practitioners who had not been in the habit of sending a note or letter to the hospital with their patients to do so in future; that it would save the time of the consultant in replying, and particularly that it might result in patients being referred back at once to their insurance practitioners when the need for hospital treatment no longer existed, and in this way lessen the congestion of the out-patient department. The Paddington form resembles a sheet of note-paper and is far less forbidding than the Scottish form, which is formidable in size and appearance.

MUSCLE EXTRACTS IN CIRCULATORY DISORDERS.

MUCH has been written on muscle extracts since L. HABERLANDT in 1929 ascribed remarkable properties to one obtained from the heart. HABERLANDT, it may be recalled, isolated the sinus of the frog's heart, macerated it in Ringer's solution, and found that the solution then showed the power to augment the contractions of the frog's ventricle. From this he concluded that there was in the sinus node a chemical hormone specific for the heart, which he called a "heart hormone."[1] His experiments were soon confirmed, but it was noted that a similar action could be obtained by using the muscle of the ventricle itself, and later it was found that the same was true of other tissues of different origin. It has now been shown, indeed, that extracts from almost all body tissues will stimulate the frog's heart; and that even the urine in cases of heart disease has some activity of this kind. G. ZUELZER has prepared an extract from the liver, named eutonon, which has claims to be regarded as a cardiac "tonic,"[2] and there are numerous other tissue extracts in use, such as angioxyl (from the pancreas), myoston (from muscle), kallikrein (from urine),[3] and lately lacarnol (from striped muscle).

Similar claims are made for these preparations as for the original heart preparation (hormocardiol) of HABERLANDT; in general they are held to increase the rate and strength of the pulse, to dilate vessels, especially the coronary arteries, and to restore a regular rhythm in experimental auricular fibrillation. Needless to say, such properties would be very valuable in clinical practice, and it is now possible to review the results obtained in a fairly large series of cases, mostly in continental clinics. The extracts have been employed mainly for angina pectoris, endarteritis obliterans, cardiac failure, and high blood pressure. Some preparations at least seem to be inactive therapeutically and such action as others possess is apparently not limited to one muscle or even one tissue alone. In angina pectoris numerous favourable reports have been published, and a direct antispasmodic action is claimed by some workers. E. K. FREY[4] in 1929 reported good effects in cases of coronary sclerosis and also in high blood pressure from a "circulation" hormone present in urine, blood, pancreatic tissue, and the spleen. B. BUCHHOLZ,[5] using lacarnol, treated 11 patients with angina pectoris, of whom seven were entirely relieved of their attacks, two were improved, and two were unchanged. In two an alteration in the electrocardiogram was noted pointing to improved conduction from auricle to ventricle. R. SINGER[6] treated 171 patients suffering from angina pectoris, hypertension, intermittent claudication, and vascular spasm with different circulation hormone preparations, and found that lacarnol, hormocardiol, and eutonon seemed to be the most active. The results were especially good in angina pectoris. J. S. SCHWARZMANN[7] and others also report marked improvement in angina pectoris after the use of muscle extract.

The preparations appear to be most efficacious when given subcutaneously, but they can also be given by mouth; they are for the most part protein-free so that no shock reaction should result—though R. SCHMIDT[8] states that most of the benefit is due to a non-specific protein therapy and not to any hormonic action. Probably some chemical substance is present in the extracts which is capable of dilating arterioles and increasing the heart's action, possibly by improving the blood flow through the coronary arteries. Definite improvement has thus been recorded in cases of endarteritis and gangrene, and recently five cases of thrombo-angiitis obliterans were shown by M. SCHWARTZMAN at the Clinical Section of the Royal Society of Medicine, all of which had improved under treatment with muscle extract. This substance has not been certainly identified, but it is clearly not histamine: adenosin has a dilator action upon the coronary arteries and may well be one of the substances concerned. Its use in treatment is still under trial. The bulk of the evidence at present available suggests that some non-specific chemical substances, present in many animal tissues and possibly containing adenosin, is capable of acting beneficially upon the heart and bloodvessels and may be of real value in cases of vascular spasm, coronary disease, angina pectoris, and possibly some other cardiovascular disorders. Further reports upon the therapeutic uses of the extracts will be awaited with interest.

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[1] Das Herzhormon, Jena, 1930.

[2] See THE LANCET, 1930, ii., 1203.

[3] Ibid., p. 601.

[4] Münch. Med. Woch., 1929, lxxvi., 1951.

[5] Deut. Med. Woch, 1931, lvii., 188.

[6] Wien. Klin. Woch., 1931, xliv., 39.

[7] Münch. Med. Woch., 1930, lxxvii., 439 and 2224

[8] Ibid., p. 440.

ANNOTATIONS

SCIENTIFIC STAFFS.

In 1927 the British Science Guild appointed a committee to inquire into the functions of the scientific and professional staffs in the public services and industry from the point of view of efficient administration and national development. This committee, of which Sir Richard Redmayne acted as chairman and on which medical science was represented by Sir Arthur Newsholme, has now issued its report.[1] The position of the scientific expert is relatively new and has arisen from necessity, owing to the complex nature of problems now present in both business and administration, and it is reasonable to suppose that it has not yet been stabilised. The committee point out that:

> It is essential that all proposals and schemes shall receive adequate consideration from every point of view. This can only be obtained if suitable provision is made for the proper presentation of the various technical, financial, and other considerations involved in every problem in such a manner that those ultimately responsible for making decisions may be put in a position to weigh the several considerations in their bearing upon questions of general policy.

This is the position of a judge who is hearing a complicated case, and it can only be secured if the various experts are able to give their views, and so much of their reasons for holding such views as they can make intelligible to the final arbiters. It is evident to the committee that this desirable state of affairs is far from being realised in either State or industrial services. They refer to the stupid and groundless views which prevail that work of a scientific and technical kind is inferior to that of an administrative kind. That such views do prevail will be generally admitted. They rest in the main on the dislike of the average Briton for precise knowledge of any kind as a guide to action and on the belief that what is true in the laboratory is not necessarily true outside it. Hence the scientific expert is often kept in his place, which is often to furnish results of routine testing, to explain and excuse the delicts of branches not under his control, and to draft reports which will be edited by his administrative superiors before they reach the directorate. The committee's remark that "an officer should supervise only work which he is competent to judge and concerning which he can make helpful constructive suggestions to his subordinates" implies that the head of a staff, including scientific members, should have at least a sound knowledge of the meaning of their work if he is to present it to the heads of the organisation. One difficulty which is not always fully appreciated by scientific people is the ignorance of scientific terminology and manner of thinking prevalent even among educated people. To write in language and construction which most people can understand the expert must continually keep in mind the need for simplicity and the avoidance of mere erudition. The science student who has not learned at school to write clear and forceful English is at a disadvantage in communicating his results to the unscientific. It does not follow that the more colloquial turn given to his report by the works manager will convey its meaning better. One of the advantages of the functional type of organisation (mentioned in an appendix) is "that specialised work is more economical than unspecialised work when the volume of work is sufficient to keep officials and workmen continuously engaged for the entire period of their employment on specific specialised work." This is, no doubt, true in the limited sense; it is clearly advantageous for a physicist to be occupied all his working time at physics, or even among physicists that an expert on calorimetry should do this if there is enough to fill his time, rather than also dabbling in work on high vacua. But the inevitable tendency, even for workers in different branches of the same science, to get out of touch is not likely to help in the coördination of the sciences or to relate them more closely to the everyday work of the nation. Closer coöperation between the various branches of services is necessary if all are to pull their weight, and this can only come about if each is able by status and attainments to command a proper hearing of his contribution to the solution of the common problems. That this is far from an accomplished fact is clear not only from the matter of the report, but from the fact that it has been deemed necessary to write it.

DIAGNOSIS OF TUBERCLE IN CHILDREN.

The early diagnosis of pulmonary tuberculosis in children is often made more difficult by an absence of sputum. Since this is usually swallowed it may be worth while to examine the fæces, but of late years gastric lavage has been increasingly employed to bring the bacilli to light. V. Poulsen, of Copenhagen,[1] recommends that the child's stomach be washed out with a small amount of weak alkaline solution; the material obtained is examined directly, a portion is cultured on Petroff's medium and a portion is inoculated into a guinea-pig. Altogether he has examined 110 children in this way and has found tubercle bacilli in 53. In 38 of the positive cases a successful result was obtained on the first examination, in 12 a second attempt was necessary, while the remaining three cases were positive at the third or fourth examination. For the most part the children excreting tubercle bacilli were under 3 years of age (41 positive in 62 cases), but Poulsen explains this by pointing out that older children suspected of tuberculosis are not often seen by him but go straight to a special tuberculosis department.

An example of the help given by this method is the case of a 2-year-old child who was admitted with an unexplained pyrexia in August, 1929. Clinical examination was negative and a radiogram showed some shadows in the mediastinum, but the lungs were clear. Tuberculin tests (Pirquet and Moro) were at first negative, but a week later these tests were positive and at a second attempt tubercle bacilli were grown on Petroff's medium from the results of a stomach wash-out. Further radiographic examination three months later showed evidence of an infiltrative process in the left lung. Meanwhile the child had had the benefit of correct treatment.

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[1] Price 1s. from the Guild, 6, John-street, Adelphi, W.C.2.

[1] Jahrb. f. Kinderh., 1931, cxxx., 127.

Poulsen rightly asks whether the finding of one or two tubercle bacilli by such a comparatively complicated method justifies the serious diagnosis of pulmonary tuberculosis in a child and whether it is fair to put parents to the expense of the costly treatment which such a diagnosis may mean. From his experience he answers both these questions with a definite "yes." It is possible, of course, for the tubercle bacilli to have come from sources other than the lungs. Tuberculosis of the tonsil, a tuberculous ulcer of the stomach, or a caseous tuberculous gland lying in open contact with the lumen of the œsophagus need scarcely be considered, but care must be taken to see that the child's diet does not include milk containing tubercle bacilli. It has been suggested that bacilli may be found in the stomach as harmless saprophytes, just as pneumococci can be found in the mouths of healthy people, but Poulsen is able to quote control experiments by M. R. Christofferson, who examined the results of stomach wash-outs in 47 normal children and obtained a positive result for tubercle bacilli only once in a child who later died of miliary tuberculosis. The method, it is claimed, has its value, not only in cases of suspected pulmonary tuberculosis but also—since a primary lung focus plays an important part in nearly all forms of the disease in childhood—in tuberculous meningitis, generalised tuberculosis, and even "surgical" cases with tuberculosis of bones, joints, or kidneys. Poulsen discusses whether all tuberculin-positive children ought to be submitted to this investigation in order to facilitate early diagnosis of lung involvement. but he concludes that the method is too unpleasant and expensive for this to be practicable. Nevertheless if any suspicion arises about such a child the test should be used so that valuable time may perhaps be saved before clinical and radiographic evidence is available.

HOW TO ORGANISE ACCIDENT PREVENTION.

THE factors concerned with accident causation must be understood if accidents are to be prevented. The study of this question is proving a fascinating one; it is throwing light on problems of healthy activity and industrial efficiency, as well as upon the accident question. A close association is being disclosed between personal health, efficiency, and freedom from accidents. A proper use of guards on dangerous machinery was, 30 years ago, the only accepted method for avoiding industrial accidents. That was the period when antiseptics were entirely relied upon for the prevention of infections; but even then surgery was coming to recognise the importance of the living tissues and the possibilities of asepsis. In the field of accident prevention a similar change has been taking place; machinery guards, like antiseptics, are indispensable in certain cases; but they can, at best, only be of use where machinery is concerned, which means in only some 15 per cent. of all industrial accidents. The personal factor rules in the remaining 85 per cent. Some persons naturally sustain more accidents than do others from the same risk; environmental conditions of heat and cold exert their influence; long hours and poor health are equally important. How this personal factor is influenced can only be ascertained by research, for which purpose reliable records are of first need. An appeal to industrial firms for help in this matter is made by Mr. Eric Farmer, an investigator to the Industrial Health Research Board.[1] He sets out how records should be kept; every accident, however trivial, should be noted, even though such high standard of reporting may send up the gross accident rate. The consequent first-aid care given will, however, as a set off, lower the number of compensatable accidents. The use of the card index method of recording is advocated, since it lends itself readily to investigation. Those workers most prone to sustain accidents form about 25 per cent. of the whole; they may have an accident rate two and a half times greater than that of others. Apparently this small group can be detected beforehand by their reactions to certain simple tests. How far, owing to variations in health, anyone may excel on one day and not on another at such tests has not yet been worked out; nor how far such variations detected in this way might reveal a temporary or a natural tendency to succumb, if exposed to some infection such as influenza. We hope that the needed records, kept on a uniform basis as desired by Mr. Farmer, will be forthcoming, so that many of the obscurities still associated with accident causation, and maybe with sickness occurrence, may be clarified.

SPECIFIC FOOD FACTORS AND DISORDERS OF THE HEART BEAT.

MOST of the recognised vitamins are necessary for the normal growth of the young animal, and at present growth is the only criterion of practical value in testing foodstuffs for some of these accessory factors. This is obviously unsatisfactory. It is clearly desirable that more characteristic effects of vitamin deficiencies should be sought for than failure to promote growth, especially when the material being tested for its vitamin content contains several factors which can only be separated from one another by complicated chemical procedures. The vitamin B complex is a case in point. There are indications that four or five, or even more, distinguishable water-soluble vitamins may be present in such substances as yeast and whole wheat, and the laborious task of examining their distribution and individual properties must obviously be made easier if some characteristic effect be established for the deficiency of each individual factor. Two new papers concerning the effects of vitamin B deficiency on the character of the heart beat may prove useful in sorting out the functions of the various postulated vitamin B fractions. The first[2] deals with the phenomenon of bradycardia observed in rats fed on diets deficient in the vitamin B complex. The normal heart-rate of the rat fed on a complete diet was found by electrocardiography to be in the neighbourhood of 500 beats a minute. Under the influence of vitamin B deficiency this rate was found to fall to 250 to 350 beats a minute in the course of three or four weeks. This slowing of the heart was not an expression of general under-nutrition associated with loss of weight, for it did not appear in animals given a complete diet restricted in quantity to the amount consumed by animals on the deficient diet. Moreover, the heart-rate could always be restored to normal within 24 hours by giving an adequate dose of vitamin B, even though the intake of food was limited during this time to the amount previously consumed. Indications were obtained that the specific factor determining this alteration in the heart-rate was the antineuritic vitamin, or vitamin B_1. The electrocardiographic records showed that this bradycardia was of sinus origin, and evidence was obtained that it was in no way controlled by vagal activity. This latter fact distinguishes the condition in the rat from another type of sinus bradycardia which occurs in the pigeon as the result of vitamin B deficiency.[3] Pigeons fed either on polished rice or on a synthetic diet containing fat-soluble vitamins but deficient in the vitamin B complex soon show a fall in the heart-rate from 200 beats a minute to round about 100. Irregularities were found to be common at the lower rates and indicated the development of heart-block. The irregularity of rhythm and the bradycardia were both entirely abolished by vagal section or atropinisation. Attempts to identify the particular food factor concerned in this disorder of the pigeon's heart have not yet been successful. Large doses of the antineuritic vitamin (B_1) failed either to prevent or cure the condition, and neither the heat-stable vitamin B_1 by itself nor the combination of vitamins B_1 and B_2 could bring about a cure. Both yeast and whole wheat contained the factor necessary for the prevention or cure of the condition, but it was not possible to identify it definitely with any of the postulated B factors. It is not claimed that these observations have at present any direct bearing on clinical medicine. In human beri-beri there is no slowing of the pulse except occasionally as a terminal manifestation, and electrocardiographic records of patients suffering from this disease have apparently never revealed the existence of heart-block. Nevertheless, these experiments should furnish a further valuable method of disentangling the components of the vitamin B complex.

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[1] How to Organise Accident Prevention in Works and Factories. By Eric Farmer. Reprint from Industrial Welfare and Personnel Management: the Magazine of Factory and Works Management, 68, Victoria-street, London, S.W.1.

[2] Drury, A. N., Harris, L. J., and Maudsley, C.: Biochem. Jour., 1930, xxiv., 1632.

ISOLATION ACCOMMODATION IN FEVER HOSPITALS.

APART from more general matters with which we dealt last week (pp. 477 and 495), the central public health committee's report to the London County Council on Feb. 24th contained an interesting paragraph dealing with the avoidance of cross-infections in the Council's fever hospitals, especially in relation to the recent rearrangement of two wards at the South-Eastern Hospital, New Cross. The problem of cross-infection in hospitals for infectious diseases is one which has always presented great difficulties. Cases of this kind are due to the fact that patients admitted to hospital suffering from one infectious disease, such as scarlet fever or diphtheria, are also in the incubation stage of another infection such as measles or chicken-pox which may not manifest itself until a week or more after admission. However promptly such cases are removed from the ward the other patients cannot avoid exposure to the infection. The urgent need of providing isolation within isolation hospitals was realised many years ago by the late Metropolitan Asylums Board and various measures were instituted for the purpose. In some hospitals the provision consists only in a series of small rooms either annexed to the large wards or arranged in a separate building in which there are single-bedded rooms or wards with two or more beds for patients suffering from a combination of the same diseases. In other hospitals in addition to such accommodation one or more wards have been converted into separate chambers by glass and wooden partitions which either reach right up to the ceiling or stop short of it by an interval of varying extent, the object of the glass partition being not only to enable the nurse in charge to supervise her patients but also to avoid the bad effects of solitary confinement on the patients. The North-Eastern Hospital at Tottenham was the first to adopt this scheme many years ago. In some hospitals, such as the Eastern, North-Western, and Western, there is a central corridor with a series of separate chambers opening on to it on either side, while at the South-Eastern Hospital the ward has been so rearranged that the separate chambers occupy the whole breadth of the original ward and open externally on to a verandah. The necessity of providing more isolation accommodation in fever hospitals has been making itself increasingly felt in recent years, so that the late Metropolitan Asylums Board was advised that such accommodation should comprise 33 per cent. of the total beds. It is obvious that these isolation beds are needed not only for patients with cross-infections but also for the reception of sporadic cases of certain notifiable diseases such as cerebro-spinal fever, epidemic encephalitis, dysentery, or mumps, as well as for cases in which the diagnosis on admission is doubtful. Owing to the lack of available space as well as on economical grounds it is probable, and indeed advisable, that such accommodation should be provided not by the construction of new buildings but by the transformation of existing large wards into a series of separate chambers, as has been done in the case of the South-Eastern and the other hospitals mentioned.

THE LOCAL MEDICAL SOCIETY.

MEDICAL men join societies for various reasons and make very varying demands on the societies of their choice. Some are content with a simple clinical meeting for the exchange of experience and the enjoyment of papers by specialists; others add to this some form of social recreation or sport, while others again would have one society provide them with every conceivable facility, from life insurance and legal protection to coöperative stores and dinner-dances. The advantages of this last arrangement are urged by Dr. W. J. Burns[1] in a paper describing the Wayne County Medical Society; he thinks there should be one unit and only one, even if special groups are organised within it. He would apply to the medical society economic and administrative principles which have proved successful in the business world, and describes a programme of education and service as well as a "courtesy programme." He considers that the society should publish a bulletin, with the aid of a live business manager to ensure a good revenue from advertisements. The education of the public should be, in his opinion, in the hands of the medical society, which should deal with problems of contract practice, fraudulent advertising, quackery, and misinformation of the public on matters of health. He speaks favourably of the "Said by Toledo Doctors" column in the daily paper which reflected—or attempted to reflect—the accepted opinion of the medical profession, with the motto of "See your doctor first." A valuable method of bringing the profession into direct contact with the public is the speakers' bureau, which in Toledo sends out an average of 10 lecturers each month to address lay audiences and counteract quack propaganda. The Wayne County Medical Society has for many years successfully maintained a physicians' business bureau, which gives credit ratings on all persons who visit the surgery, in case the doctor doubts their ability or inclination to pay; provides a "delinquent account letter service," and helps physicians who wish to have outstanding accounts adjusted or financed. Moreover, it provides annually a lecture course on economics by prominent laymen. A confidential list for members only contains the names—of course, in code—of people with whom members of the society have experienced unsatisfactory financial relations. Another facility provided by the medical society is the physicians' telephone exchange; every time the telephone rings in the doctor's house a light signal is received in the office of the bureau, and if the doctor fails to answer, the bureau takes the message for him. The "courtesy programme" includes such useful little services as a daily telephone call to inquire after the health of a sick colleague on behalf of the subscriber or a visit from a member of the welfare committee. The happy members of the Wayne County Medical Society enjoy in addition a legal defence system, an income-tax advice bureau, luxurious club rooms, a café, a roof garden, and a careful watch on any attempts of the laity to encroach on the business of medical men.

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[3] Carter, C. W.: Ibid., p. 1811.

[1] Minnesota Med., February, 1931, p. 113.

THE EXPERT WITNESS.

THE growth of modern science has profoundly influenced the evidence heard by courts of law. Not only are technical issues more frequently involved but fresh ways of proving fact are constantly being discovered and elaborated. One consequence of this has been the rise of the expert witness, who in two generations has stepped from a humble position into the front rank. As might be expected, this innovation has aroused considerable opposition. Medical men are familiar with the conflict between the expert medical witness and cross-examining counsel; they are more or less used to being told either that medical witnesses will say anything or that they are careful to say nothing, and that they say what they do say in unintelligible language. It comes to them as rather a surprise, therefore—and perhaps also as rather a relief—to find that they are not the only class of expert witnesses to arouse intense suspicion in the minds of practising lawyers.

On Feb. 27th the Medico-Legal Society discussed a paper by Mr. R. F. G. Churchill on the identification of firearms and bullets. The subject has been well ventilated in the lay press for some years, and Mr. Churchill is conspicuous not only for the range and accuracy of his practical knowledge but for the direct simplicity with which he communicates it. Yet the paper aroused what was almost a storm of legal criticism against firearms experts in particular and scientific witnesses in general. Very little of the criticism bore any relation to the facts, but its volume and pressure were significant. In the opinion of one speaker, for instance, Mr. Churchill's paper and demonstration showed that science could prove anything, while another held that to the ordinary common jury nothing was more dangerous than the expert witness, whom no one in court could understand and whose evidence was crucial. The latter speaker went on to say that as people became more inadequately acquainted with science they attached more and more importance to expert evidence. Others suggested that a witness giving evidence of the type produced by Mr. Churchill could not be effectively cross-examined, and that if he happened for once to be wrong, no one could expose his error. The parallel was drawn between his work and that of the finger-print expert, whose word, it was alleged, was not nowadays questioned, but whose methods deserved closer scrutiny than they received.

The answer seems to be that technical evidence will continue to grow in importance and that the legal profession must keep pace with it. The expert produces his evidence; it is then the business of counsel to examine it appropriately. To do this it is not necessary—even if it were possible—to know the intricacies of every science, but merely the principles common to all forms of investigation. Unless expert evidence is based on careful technique and observation it proves nothing, and no witness is more easily shaken than an expert witness whose evidence is really unsound. The reason why first-class expert witnesses appear alarmingly infallible is that they have already tested their own evidence before bringing it to court. If their evidence will defeat cross-examination, counsel can rest assured that it is true to fact.

OLIVE OIL AND DIGESTION.

A PAPER on the effect of oils on gastric secretion and motility, by W. Morrell Roberts,[1] calls attention again to the therapeutic uses of fat in the form of olive oil in certain digestive disorders. It has been shown experimentally that fats are powerful inhibitors of gastric activity both secretory and motor. Oils act in a peculiar manner in that their inhibitory effect is produced after their entrance into the duodenum. They lessen the normal response of the stomach to food and diminish peristalsis as well as acidity (Roberts). Placed directly into the duodenum through a duodenal tube, fats cause closure of the pylorus and greatly delayed emptying of the gastric contents. They are most effective when given just before meals, since they are then rapidly passed into the duodenum and much diminish the gastric response to food. Oil also seems to have a definitely inhibitory influence upon the psychical secretion, Roberts finds, though it is hard to say exactly how this is brought about. The practical result of this knowledge is that in cases of hypersecretion and hyperperistalsis it is physiologically sound to give oil before a meal. A tablespoonful of olive oil, flavoured if necessary with a little peppermint, before the three principal meals is stated to lessen the discomfort and heart-burn which is apt to come on an hour or two after taking food. Olive oil, and other fats, have the further advantage that they cause copious secretion of bile, as can be readily observed by means of a duodenal catheter. Partly because of this and partly through the action of the fatty acids which are formed during digestion they are also mildly laxative. In gall-bladder disorders, in which reflex gastric hypersecretion is common, pure fats are theoretically valuable in that they are powerful cholagogues and also lessen gastric activity. There is no evidence that fats as such increase the amount of cholesterol in the bile and they need not therefore be forbidden on the ground that they increase the formation of gall-stones; indeed in many cases of cholecystitis and cholelithiasis fats are well borne, and it would be wrong to withhold exactly those foodstuffs which are most capable of emptying the gall-bladder and biliary system. The use of olive oil, therefore, given fasting, is often recommended in hyperchlorhydria and in cholecystitis. It plays an important part in the success of the courses of treatment devised by Sippy and Coleman.

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[1] Quart. Jour. Med., Jan., 1931, p. 133.

PANCREATITIS IN MUMPS.

Dr. M. Bernard Brahdy and Dr. I. H. Scheffer,[1] of the Willard Parker Hospital, New York City, have recently published an instructive paper on the incidence of pancreatitis in mumps, though it is somewhat surprising to find that they make no mention of a paper appearing some years previously in the same journal by L. W. Farnham [2] who collected 119 cases. Only a small proportion of all cases of mumps notified in New York are admitted to hospital, but it is noteworthy that among 252 mumps patients admitted to the Willard Parker Hospital between Jan. 1st, 1929, and March 1st, 1930, as many as 13 developed pancreatitis in from three to nine days after admission. Five were males and eight females. The youngest was aged 6 and the oldest 30, the average age being 17. The pancreatitis appeared from the fifth to the eleventh day of disease, the average being the seventh day. In all but one case both parotid glands were affected. With the exception of one man who developed orchitis none had any complications besides pancreatitis. The principal symptoms were epigastric pain and tenderness, vomiting, and fever. There was no diarrhœa or steatorrhœa, and the urine was free from sugar in every case. All the patients recovered. No mention is made by the writers of the possibility of subsequent diabetes, of which a number of examples have been recorded.[3] Recovery from mumps pancreatitis, however, is the rule and death is very exceptional. In the only two autopsies on record the pancreas showed more or less extensive œdema and fat necrosis. Similar changes were found by Wollstein in the parotid glands of monkeys in which mumps had been produced experimentally.

FUEL GASES.

THE pollution of the air we breathe by the fuel we burn has been brought to public notice by two events this week. The first of these is the publication of the sixteenth report [4] on Atmospheric Pollution which contains, besides the usual detailed tables of deposit, a report of the research committee and of the standing conference of coöperating bodies. Domestic grates are now well recognised to be the principal contributory cause of the smoke nuisance in many of our large towns, and the burning of every ton of raw coal in an open grate has been estimated to cause ten shillings' worth of damage in many areas. Sir Napier Shaw remarks on the cheerful prejudice in the home in favour of the coal fire, and adds that progress will depend much on the production at economic rates of a satisfactory substitute. On the other hand, in the industrial towns of the North the great loss of ultra-violet in the middle of the week is mainly due to factory smoke. In the centre of Sheffield no ultra-violet at all gets through during the months of November and December, and in some towns, Liverpool especially, a push is being made to persuade the small householder that it is inadvisable to burn raw coal. Education rather than coercion has been found effective among the manufacturing community, and may in the long run be the better way of dealing with the domestic polluter; although the methods of the fourteenth century when an individual was tried, condemned to death, and executed for burning soft coal in London command respect.

The second event is the presentation to the London County Council on Tuesday of a joint report of its central public health and public control committees drawing forceful attention to an omission in the report of the Fulham inquiry. The recommendations of the Electricity Commissioners contained, it seems, no requirement for the warming of the effluent gases which had necessarily been cooled by the process of washing to eliminate sulphur compounds. There has been sharp differences of opinion between experts as to whether the carbon dioxide discharged with the flue gases could in any case reach the ground level in sufficient concentration to constitute a danger, but the evidence of Prof. J. S. Haldane and Dr. Owens has satisfied the council that the danger exists and a strong recommendation is going forward to the commissioners. Incidentally Sir Frank Baines has estimated that in the last 25 years the invisible sulphur fumes have caused damage to buildings to the extent of some £60,000,000, and the research committee are developing an apparatus for measuring the amount of this most destructive element of pollution in the air.

IODINE AND GOITRE.

Dr. J. B. Orr has compared the iodine content of foodstuffs in various areas where goitre is common or uncommon among school-children. His report, just published,[1] shows that he encountered a preliminary difficulty in deciding whether the goitre incidence in a given district was high or low, and he suggests that future investigations of this kind should be preceded by a precise survey. The samples taken were specimens of soil, pasture, milk from grazing cows, eggs, potatoes, cabbages, and blood and thyroid from sheep slaughtered in the district. In all, 458 substances were analysed, but the soils have not yet been studied. Dr. Orr admits the wide margin of error possible in quantitative estimations of minute amounts of iodine in organic substances. The method used was ashing in the presence of an alkali, extraction of the iodine from the ash by alcohol, and Winkler's titrimetric estimation. An attempt was made to estimate the amount of error, which proved to be on the average 2·5 per cent., and always negative. Dr. Orr thinks that the results obtained by one worker are fairly comparable. He has not, however, succeeded in obtaining conclusive results; all that can be said is that there appeared to be more iodine in the foodstuffs from a known goitre-free area than in those from areas where goitre is endemic. No definitely goitrous glands were found in sheep, but the lowest level of thyroid iodine was correlated with a low level in pasture and milk. The question whether deficiency of iodine is a cause of goitre and, if so, whether it is the sole cause, remains unanswered.

WE regret to announce the death in his 64th year of Dr. Douglas Drew, which occurred on Feb. 25th at his country house near Bexhill, where he had lived since his semi-retirement through illness some 16 years ago.

WE have also to record the death of Mr. Hugh Percy Dunn, consulting ophthalmic surgeon to the West London Hospital, on March 2nd, at the age of 76.

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[1] Amer. Jour. Med. Sci., Feb. 1931, p.255. [2] Ibid., 1922, clxii., 589.

[3] See Rolleston, J. D., Acute Infectious Diseases, 2nd ed., London, 1929, p. 242.

[4] Observations in the Year ended March 31st, 1930. Department of Scientific and Industrial Research. H.M. Stationery Office. Pp. 74. 4s.

[1] Iodine Supply and Influence of Endemic Goitre. M.R.C. Spec. Rep. Series, No. 154. H.M. Stat. Office. 1931. 1d.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

X.—GUILT AND INFERIORITY.

A.—Guilt.

THE CAUSES OF GUILT.

It is perhaps as well to begin our study of guilt feelings by pointing out again the primary inborn pattern or *unconscious* tendency, which we may describe as a *hereditary* or general source of guilt feeling, in order to distinguish it from such other *conscious* sources of guilt feeling as may be *acquired* from the experiences of an individual's life-time. The latter can only occur as a modifying or exaggerating influence on the former, which is the more fundamental source, and conscious guilt becomes associated with, and fits into, the preconceived pattern of unconscious guilt. Guilt occupies a very close relationship towards the other "father imago" affects, fear and inferiority, and will be found to be of the greatest importance in the ultimate development of the sex-life in particular, and the satisfaction of "desire" in general.

For instance, it is not at all uncommon for a patient to say in effect, "I always feel that it is wrong for me to be happy, and that I am going to be punished in some way if I feel pleased about anything." This is the basis of many a pessimist's philosophy, and is itself sufficient to justify both his pessimism and his philosophy. In such a patient's mind there is an association between *pleasure* and *punishment* of the simple type, "If I do get what I want, I shall have to be punished for it." This is a direct derivative of father imago feeling, who is felt as punitive towards the primary wish for the mother. So may be developed a conditioned reflex towards all other gratification of desire, by repeating the primary pattern: I want (mother)=pleasure ∴ guilt ∴ fear of punishment (father). Subsequent desire is towards other sexual objects, but the primary pattern or initial conditioned reflex is liable to remain, so that we have a general unconscious equation, *pleasure (in general) or sex (in particular)=guilt=punishment.* It is this fundamental axiom, which is so deeply seated in the unconscious, which requires to be *unlearnt by experience,* with the substitution of other, more conscious and wiser, values, but by no means all of us succeed in doing so. Not only sex, but happiness also, is still in many quarters suffering under the same primitive taboo, both individually and socially. And so the repetitive circle of unconscious guilt and primitive superstition is kept rolling, by the reinforcement by experience of already predisposing tendencies. The problem is not only one which affects the health of those who are obviously psychologically sick, although it is in them that we are able to see its ill-effects most clearly. It is also a social problem, the ramifications of which extend through all the activities, restrictions, and conventions of society, in law, religion, politics, and education. Everywhere there is the same doubt, "Is it right to be happy?" And in sexual matters, at least, the conventional answer is usually a more or less horrified "No!"

There are several common ways in which these primary unconscious guilt feelings may be developed and exaggerated by experience. Any frequent resource to blame or punishment will tend to do so, and many children are blamed and punished for being naughty, whose behaviour is experimentally normal but socially either misunderstood or selfishly inconvenient. There are, however, other and more subtle ways. For example, it is a practice for many parents to allow their children to sleep in the same bedroom with themselves. If they think about it at all, their justification for doing so is a quite reasonable one—namely, that a child of the innocent age of 2 or 3 or even more cannot be expected to know anything about sexual matters, and therefore is not likely to be influenced by anything which may take place in the bedroom. It is quite true that the child does not "know" much about sex, but the mistake lies in thinking that it is necessary to "know"—i.e., to be conscious of, sex, in order to be emotionally influenced by overheard intimacies. The experience is not a conscious one and does not relate to *consciousness,* but it may arouse a very deep *feeling state,* which is all the more important because there is no consciousness with which to correct it. The probability is that very soon after the child is a year old its feelings, *quite apart from any consciousness of them,* can be influenced to some extent by what it may see or hear of its parents' sexual experiences. It is just at this time that the child's emotional orientation is most definitely associated with guilt, owing to the phase through which it is passing. Stimulation of sexual feeling will, therefore, cause both guilt and conflict, and the fact that there is no consciousness of what is happening keeps the experience at an emotional level, without possibility of outlet. It would seem to be wise, therefore, for children to sleep in a separate room from their parents, where this is possible, after they are about a year old.

It may be asked why it is, if this is the case, that under circumstances where overcrowding is inevitable, such as the slums, the feeling of guilt is not stronger than it is under conditions where there is more opportunity for social hygiene? It must be remembered, however, that guilt is relative to the conventional standard of the environment in which the individual is placed. The conventional standard, and therefore the measure of guilt, is necessarily different in the lower classes of society, and in any case the human mind is blest with a very large measure of adaptability. It is not suggested that the child who sleeps in the same room with the parents up to 3 or 4 years of age is inevitably bound to develop a neurosis, but only that *if the potentiality exists* there is an additional likelihood of its development under these circumstances.

Because guilt is relative to the external standard which authority imposes, if the parental attitude towards excretory function and sexual matters is of the conventional (and unconsciously defensive) "hush-hush" type, this is the measure of guilt which is additionally imposed upon the child. Much guilt may be acquired from this source, through the suggestive influences of early environment. It is important, therefore, to remove as far as possible all association of guilt and prudishness from the excretory functions, from which it may later so easily and unconsciously become transferred to sex. Where the parental attitude is of the "Calvinistic" type, and the religious teaching is in terms of sin and punishment, the guilt feeling is liable to become exaggerated to a very dangerous extent, and is a very common source of subsequent neurotic development.

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* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Earlier lectures of the series have appeared weekly in THE LANCET since Jan. 3rd. The second part of Lecture X. will appear next week.

A great many people have, at some time, been exposed to some degree of "sexual trauma." Sexual exhibitionism occurs more frequently perhaps than is generally realised, and many young girls have seen at some time the indecent exposure of male genital organs. The only way in which it is possible to explain the affect and conflict which may be so intensely aroused in a small child of 5 or 10 by such an experience, is to realise that it is not a matter of consciousness, but of inborn feeling, which causes them to be so stirred emotionally by what they have seen. *All premature sexual stimulation gives rise to guilt feeling*, and it is for this reason that it is so undesirable that it should occur.

A boy taken into his mother's bed, say, at the age of 5 or 10, after the death of his father, is subjected to an emotional strain which cannot possibly be realised by any parent who is seeking to find comfort in this way from an emotional loss. The effect is always dangerous and frequently disastrous upon the child's emotional development.

It is probable that all guilt in adolescence is fundamentally associated with sexual guilt, even if it is apparently associated with some other cause, such as stealing or lying. The feeling of guilt is anticipatory of punishment, and the punisher is unconsciously associated with the "father imago." The boy who has been subjected to a public thrashing for stealing at his school may very easily suffer thereafter from an increase in his feeling of guilt and shame, which will effect the subsequent development of his sexual life, as well as his general attitude towards authority.

We may distinguish at this point between guilt and shame. Guilt is what we feel about ourselves, irrespective of what anybody else may know about us. Shame, on the other hand, involves the additional feeling that someone else may be aware of our guilt. It is important to remember that guilt is one of the "transferred affects." It can never be an isolated phenomenon relating only to a single experience. It is always developed in continuity with past experience and refers back primarily to its unconscious source.

THE FUNCTION OF GUILT.

The primitive functions of fear and guilt are probably somewhat similar. The one is associated with physical, the other with moral, safety. In both cases, however, it would seem that their biological utility becomes less important with the development of the human race. Guilt is only protective through its association with fear of punishment, and this, although it may be necessary in early days, is a psychological motive which with development becomes progressively less desirable. The probability would seem to be that the mature and healthy mind should feel none of this kind of guilt at all, nor in fact any fear of punishment. It is easy enough to compel the discipline of a family or of a nation by fear of punishment, but the disadvantage of this method is that it keeps its members in a state of dependent immaturity. The psychological ideal is to escape from all such feelings of fear, guilt, and inferiority, through growth to what may be described as a state of "coöperative individualism."

From a rather different point of view guilt may have another important function, which is to establish individual independence through rebellion against the dominance of authority. The boy who is persistently "naughty" is probably trying to exercise his independence, and he feels that one way in which he can do so is by disobeying authority. Authority expects us always to do the right thing, therefore a rebellious independence will show itself by a tendency always to do the wrong thing. "*Naughtiness*" *is often purposive*, and we may choose to be "guilty" as a means of exercising our independence. It is a pity that this should be so because, as has already been mentioned above, the psychological ideal is that independence should be achieved not by being guilty, nor by slavish imitation of conventional morals, but by our own free choice of a higher ideal of behaviour. Naughtiness in children is often caused by the so-called "goodness" and conventional moral expectations of grown-ups. As soon as the child realises that there is nothing to be gained by playing fast and loose with adult conventions, he will usually settle down to become a good citizen.

Superstition and obsessional neurosis.—All superstitions are based upon a *fear of punishment*, and seek to deflect it by an *act of propitiation of a symbolic kind*, addressed towards "whatever gods there be" derived from father imago. Superstition is the deep-rooted in the human race, and it is liable to unconsciously motivate the behaviour of a great many of us. But to be thus dominated by superstition is to be dominated by the unconscious motives of fear and guilt, and is very closely associated with neurosis.

It is in obsessional neurosis that this defensive and propitiatory mechanism is given the fullest expression, and it may be developed to such an extent as to absorb almost the whole of the energy of life. The apparently ridiculous repetitive rituals of hand-washing, touching objects, or counting, are not as purposeless as they seem. The patient will say: "I cannot help it, however much I fight against it the compulsion is too strong for me. *I feel that if I do not do it just in the right way something awful will happen to me, and then I have to go on doing it.*" Obsessional neurosis is a defensive propitiatory ritual expressed in some form of symbolism, which at the same time usually both satisfies an infantile unconscious wish, and seeks to remove an intolerable feeling of guilt. Its motivation is therefore unconscious, although its behaviour is purposive, and it is therefore beyond the patient's conscious power to control.

DEFENCE MECHANISMS.

The defence mechanisms associated with guilt may be classified as follows: Repression, over-compensation, projection, identification, self-punishment.

Repression.—The inevitable tendency of an intolerable exaggeration of the guilt feeling is that it should be repressed from consciousness. But the result is not only an elimination of guilt, but also of more or less all *normal sexuality*. Repression must not be confused with suppression or sublimation. With suppression the process is conscious and the sex life remains potentially under control, whereas with repression it is both out of consciousness and out of control. Sublimation, on the other hand, neither suppresses nor represses, but raises the motive above the level at which guilt is felt and expresses it through some higher channel. Sublimation, however, is comparatively difficult to achieve, and our patients have usually followed the easier path of repression in order to preserve their emotional stability.

Over-compensation.—"All is not gold that glitters," nor is all good that looks good. The common over-compensation for a feeling of guilt is *priggishness*, but there is all the difference between the "goody-goody" boy who is an over-compensated prig, and the really good one who is at times quite naturally naughty. The popular judgment of the prig is based upon a very sound estimate as to his true worth. It requires only a very little knowledge of psychology to value the common over-compensations as shams, which only serve to disguise a very different state of affairs underneath. Priggishness is a defensive mask for a feeling of intolerable guilt, and where the one is the other is not far behind.

In Lecture VII. reference was made to "Messianic identification" as an over-compensation for a feeling of guilt, and the danger of such an exaggerated standard was pointed out, because it left the primary basis of feeling and desire largely unchanged and liable to be causative of conflict and symptom formation. There are, however, more subtle ways in which this mechanism operates, and they are particularly to be found in the numerous forms of obsessional neurosis, in which a *compulsive rectitude* is sought to offer and compensate for the feeling of guilt. The repetitive hand-washing mania is an example of this type, but the same mechanism may be found seeking through various symbols of a more or less concrete kind for some solution of the same unconscious problem. The characteristic psychological attitude in all such cases is found to be one of *over-conscientiousness*, which exists quite apart from the obsessions themselves. All such standards of achievement as may be classified under the heading of "compulsive perfection," in which the idea of failure is an intolerable one, are thus probably closely allied with obsessional neurosis. They form a most important group in their liability to mental breakdown, because a combination of emotional repression (with thinking in its stead) together with a standard of compulsive perfection is obviously going to lead to persistent, unnecessary, and uncontrollable "overwork."

Projection.—The prig is generally at his happiest when he is finding fault with other people's misdemeanours. The mechanism in this case is one of vicarious satisfaction and probably involves identification also. The "nosy Parker," who spends his time in searching the public parks for acts of indecency, is a bad example of unconscious psychological mechanisms.

The "purity leagues," with the best intentions, do a great deal of harm by exaggerating the importance of sexual guilt, because they usually refer in no uncertain terms to the disastrous physical and moral punishments which await the wrong-doer. The well-meaning pamphlets circulated to adolescents about masturbation are often only examples of an unconscious projection mechanism, and may have the unfortunate effect of doing more harm than good by exaggerating fear and guilt. It is probably true to say that such pamphlets do more harm than the minor offences which they seek to eradicate. The frequency with which patients unconsciously tend to refer to masturbation as the cause of all their illnesses and misfortunes is not lessened by the fact that they have often read that such is the case in purity pamphlets.

Identification is another means of satisfying sexual desire and at the same time avoiding its accompanying guilt feeling. When we read all the gloomy sexual details of matrimonial misfortunes in the newspapers, it is not difficult to realise that we are being personally involved in them through the mechanism of identification. There would not be so much of this type of information in the newspapers were it not that there is a substantial public appetite for such details. It is very difficult to estimate the effect on the public mind, especially in the case of juveniles, of much that passes on the cinematograph screen, when we realise that the satisfaction derived is a vicarious one through the mechanism of identification, which serves to stimulate passions which were before, in many cases, in abeyance. The effect is not, perhaps, wholly harmful, since such vicarious experience provides to some extent an outlet, but it is not without danger. Carried to a further degree of psychopathology, we are familiar with the "voyeur," who, to make up for his own repression and the failure of his normal sexual development, is compelled to obtain his satisfaction from observation of some act of physical intimacy in others.

Self-punishment.—The problem of self-punishment is particularly important in psychopathology. The purpose of this principle is an unconscious defensive one, being to administer the punitive blow first to oneself, in order, by so doing, to escape what may be presumed to be something worse at the hands of the punitive "father." In primitive races *sacrifice* is a very important example of this mechanism, by which the gods are placated by a gift, which is at the same time a loss to the individual suppliant. The primitive mind is often seeking in this manner to "buy off" the punitive gods by presents and sacrifices, of which many examples occur in the Old Testament.

> "If thy right eye offendeth thee, pluck it out . . . If thy right arm offendeth thee, cut it off and cast it from thee for it is better for thee that one of thy members should perish and not that thy whole body should be cast into hell." (St. Matthew, v., 29–30.)

The use which may be made of such texts as these fits in very readily with the pre-existent unconscious tendency towards self-punishment.

The *castration motive* is one of the common directions which self-punishment, as an escape from guilt, is liable to take. Castration is an act of self-deprivation and self-punishment in which one becomes identified with the punitive father, and by the act of sacrificial de-sexualisation escapes from all consequences of guilt. In neurotics it has many forms more subtle than those occasional cases of sexual self-damage which may occur with knife or razor in psychosis.

It is interesting in this connexion to consider the practice of *circumcision*. It is probable that, in the first place, its conscious justification was as a means to preserve hygiene in a hot, sandy, and highly infected country. On the other hand, its unconscious emotional ætiology must not be omitted. It was an act performed as a ritual by a father figure, which on the one hand involved the loss of a part of the sexual organ, and on the other was an act of initiation into the sex life of the tribe. It partook, therefore, of the character of an act of sacrifice. The medical profession is inclined to regard circumcision entirely from the physical point of view, and to omit its deeper psychological significance. If it is to be done at all, it is important that it should be done in early infancy in order to minimise its effect as an unconscious trauma. At a later date it may become associated in the unconscious of a potential neurotic with acts of punishment and castration ritual, with the doctor quite unwittingly in the rôle of father figure, and may precipitate very undesirable developments. It is probably necessary for the neurotic tendency to be there in the first place, but it is interesting to note that such a common operation as appendicitis is also liable to be ascribed by the patient to castration punishment, as if one "tail" were equal in value, to the unconscious, to another.

Where a man, prior to marriage, takes his anxieties to his doctor and suggests circumcision, it is necessary for the physician to tread very warily, because he is on dangerous ground. To the unconscious, circumcision has a castration value and, if prior to marriage the patient has got a wish to be castrated, it bodes ill for future matrimonial success, and a surgical operation of this kind is liable merely to reinforce pre-existent unconscious motives.

THE CONSEQUENCES OF GUILT.

It is impossible to estimate the price that we pay for the continued existence of our primitive unconscious guilt feelings. It is probable that as a single source of sorrow, it is by far the greatest in the world. There is nothing which so intimately touches the lives and happiness of every individual as matters appertaining to sex and guilt. It is impossible to go into this subject in the detail which it deserves, but it is probably not too much to say that the sexual factor is responsible for most of the commonest examples of mental ill-health, besides much that passes for physical disorder, and also for much unhappiness that does not come into the hands either of the doctor or the lawyer, but is borne at home more or less in silence.

Let us consider for a moment some of the consequences of guilt. Owing to the general absence of any sexual hygiene or practical instruction, the boy masturbates and the guilt which is associated with that action then reinforces primary unconscious guilt feelings and tends to become transferred to any later sexual activity. It is suggested that most men, particularly in this country, are not entirely free from a certain sexual priggishness, sentimentality, ignorance, or wrong sense of values, which is liable to make of them in marriage blind leaders of the blind.

The girl enters upon marriage usually quite unprepared, afraid of herself, her body, and her emotions, and if not entirely ignorant of what is expected of her, probably partly misinformed. It would be interesting, if it were possible, to obtain statistics as to the relative successes and disappointments of the honeymoon. They would probably make depressing reading, in spite of the sentimental value with which that period is invested. How could it be otherwise, when both the man and the woman are usually so much worse than unprepared for what is in fact by no means the easy instinctive business which some people are inclined to believe it to be? The consequence of guilt in the man, and of his ignorance of feminine psychology, is that very frequently the wife is not sexually satisfied, suffering what in some cases may be tantamount to the agonies of rape. Again it is impossible to obtain reliable statistics, but inquiry would seem to show that a very large proportion of women find their sex life, which should be so much more, only a trial and a disappointment.

The consequences are threefold. Firstly, the husband and wife find that what should be binding them together is driving them apart. Sexual frustration and disappointment is probably the commonest cause of matrimonial trouble, distributed, through the mechanism of "transferred affects," on to any insignificant excuse for something about which to complain. Secondly, the love which should be satisfied mutually between husband and wife, being to some extent frustrated, seeks to attach itself elsewhere, either in illicit partnership, or as is very often the case, upon the children of the union. *Parents need to be sexually happy themselves before their attitude can be all that it should be towards their children.* If this is not the case, the wrong type of love tends to be attached to the child, giving rise to an exaggeration of the already potential Œdipus and Electra motives. Sexual feelings and experiences that are feared or disliked, exaggerate the already potential tendency to speak of sex in hushed and guilty whispers, and the vicious circle is started again, encouraging the development of unconscious factors and neurotic mechanisms in the child. Thirdly, the normal psychological development of the child depends largely upon the example of the parents for its development. The bringing up of a healthy family depends upon the health and happiness of the parents. Children can very readily sense friction between parents, even if it is not given overt expression. If they get the impression that marriage is not a happy state, they will not approach it themselves in the way in which they should.

The need for sexual hygiene is probably greater, from the point of view of social happiness, than anything else at the present time. Sex is not an instinctiv business which takes care of itself, because it is largely distorted by protective unconscious mech isms and neurotic manifestations. *Our attit towards sex is inevitably wrong whilst it is unconscio and instinctive, and requires a great deal of educatio organisation, and common sense before it can be p right.*

CASE Z.—Male, unmarried, university graduate (doub first), age 23.

Complained of: Suicidal depression. A compulsive an destructive tendency towards self-analysis. Lack o concentration.

History: He was an only child. The following extrac are taken from the autobiography which he wrote early his treatment.

"I slept in the same room as my mother and father un I was 12. I remember lying in bed with my mother, an uncovering and sucking her nipple. She seemed ha annoyed and half pleased. I often got into my mother bed after breakfast. She was an invalid. I call it dir now, morbid curiosity. I used to play that my father an mother were King and Queen of Scotland, and I was Fi Marshal Johnson, dressed up in armour and plumes. I u to publish daily and weekly papers with accounts of m victories for my mother to read. I dressed up every Sund for three years, and all the maids came in for audienc I could not bear to be teased and went into blind rag when I used to lie on the floor and howl. I always used t run to my mother for protection. I was wheeled about in a pram until I was 9. At about 5 I found a stone in th shape of a ring and twice went through an elaborate cer mony of marrying my mother. I was very frightened o my father and called him the "brigand."

At 5 my thumb-nail, which I had caught in a door, cam off during family prayers, right in the middle of the Lord Prayer, to my great delight." (The loss of the finger-na is associated in the unconscious with castration.)

He went to the university where his intellectual brillianc earned him a double first, after which he was awarded travelling scholarship. While he was abroad he fell in lo with a German girl, but this aroused intolerable conflic and he had a nervous breakdown which nearly resulted i suicide. He was taken into a nursing home where th following incidents occurred.

One day he was in the workshop repairing some sho He said, "First I cut one finger and then the other. knew the knife was going to slip again and it did, rig across the top of both legs. I had to have three stitches my leg. I knew it was not an accident, because I w expecting it to happen all the time, but I could not preven myself from doing it."

Another time he was in a barber's shop getting his ha cut, when he felt a compulsion to tip the barber. This w a thing he had never done before, because he said he alwa hated barbers. When asked why, he said, "because the talked too much." (Rationalisation: barbers are associate in the unconscious with castration, because the hair i associated with virility.) This time he walked out as usu without tipping the barber, but he had not gone far before he felt compelled to return to do so. He re-entered the shop and made the excuse of buying some hair-oil, but in a state of acute distress walked out again, without having tipped the barber. Again he had to return and this time his excuse was to buy some razor blades, but his barber had

(*Continued at foot of next page.*)

SPECIAL ARTICLES

PASTEURISATION IN RELATION TO MILK DISTRIBUTION.

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WHILE there are numerous reports dealing with the hygienic production of milk and the various conditions which affect its bacterial content, inadequate attention is usually paid to the effect of suggested reforms upon the practical side of milk distribution. While in our big cities, and particularly in London, the distribution of milk falls more and more into the hands of large distributing companies, it remains true that there are still innumerable small distributors whose livelihood depends upon milk and who play a considerable part in the distribution of milk, often with benefit to the community. For example, the Departmental Committee on Distribution and Prices of Agricultural Produce in their interim report issued in 1923[1] remark: "It has been stated to us in evidence that at least a quarter of the total quantity of milk consumed in its liquid form is distributed directly by producer-retailers who are farmers or cowkeepers retailing their own milk." Besides these there is the small retailer who obtains his milk from local sources and not from a wholesale dealer, and adding these the same report computes them as bringing up this small scale distribution to half the total quantity of liquid milk consumed.

To adopt measures which will squeeze out these small operators has some merits as such, but if it plays into the hands of large combines it may be of very dubious benefit to the milk consumer. It is essential to avoid anything in the nature of a monopoly in the distribution of milk. These questions are particularly applicable to the problem of the compulsory pasteurisation of all milk-supplies, a problem which not only is one much under consideration, but which is one upon which we have sooner or later to come to a definite decision.

Nearly all the discussion upon pasteurisation in this country centres round its two scientific aspects—viz., will it render milk safe from the risk of conveying harmful bacteria; will it damage milk as a nutritive food? A third aspect merits consideration which is its effect as an administrative measure, if it is put into operation.

I have discussed in detail elsewhere[2] the scientific aspects of pasteurisation, and it would be outside the scope of this paper to review them here. I am prepared to accept that pasteurisation, if efficiently carried out and adequately controlled, will very largely remove the danger of bacterial diseases being carried by milk. I do not think that its opponents have demonstrated, when efficiently performed, that it does any material damage to any known nutritional factor in milk, but the last word has not been said on this side and our knowledge is admittedly incomplete. Taking for granted its scientific applicability, I propose to confine attention to the economic considerations implicated.

An Ideal Milk.

In the first place it must be emphasised that the ideal condition, far superior to anything else, is pure raw milk, untreated by heat, unmanipulated, except that it is kept as cool as possible, obtained from clean cows free from disease, and handled throughout with scrupulous cleanliness by persons who run no risk of conveying harmful bacteria to the milk. While such an ideal milk may be attainable for the few it is impracticable for the many and, as regards the general milk-supply, none of these conditions can be obtained. As regards cows the main danger is tuberculosis, and the most scientific way of eliminating the risk is by a thorough and well-thought-out policy of dealing with bovine tuberculosis. The practical difficulties are enormous, and of the enforcement of such a policy there is no trace or any evidence that the agricultural interests involved are prepared to face the problem or willing to submit to the restrictions necessary to its effective realisation. None of the methods now in operation do more than touch the fringe of the problem.

The control of milk handlers has been tightened up by the Milk and Dairies Order of 1926, but it is a difficult problem and, at its best, hard to control effectively on a basis of notification and the reporting of suspected cases. Theoretically this 1926 Order should also give us clean milk, or, at least, reasonably clean milk free from a large number of bacteria, but in its practical operation it is largely a dead letter, and it would be difficult to visit a series of farms in any rural district without finding on all of them extensive and serious evasions of its provisions. Marked improvements there have been during the past 10 years, but improvement only from mostly very unsatisfactory conditions.

If these statements are true we are driven to consider pasteurisation not as an ideal solution but as a second-best procedure because the best is unattainable. Considering it as a public health measure for the protection of the milk consumer it is necessary to discuss in some detail the economic and practical questions involved and the extent to which they can be removed or their evils minimised.

Pasteurisation should be a scientific form of heat treatment, and as such involves precise definitions of time and of temperature. Most scientists in this country are prepared to accept the Ministry of Health definition of scientific pasteurisation as set out in the Milk (Special Designations) Order, 1923. This requires that the milk shall be "retained at a temperature of not less than 145° and not more than 150° F. for at least half an hour, and be immediately cooled to a temperature of not more than 55° F."

"Flash" Pasteurisation.

Practically all our data in this country are based upon this definition, and if any other is used at once the efficiency of the process is in question. It follows, therefore, that when discussing the legal authorisation of pasteurisation it is necessary to

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(Continued from opposite page.)

appeared, and he could not tip him after all. He said that he felt sure that if he could have tipped him in the first place, all would have been well. He suggested of his own accord that the barber represented "cutting" and the hair "manhood."

There were other evidences in this patient of castration symbolism, but three have been mentioned here—viz., the thumb-nail, the knife, and the barber's scissors. It is possible that his impulse to commit suicide, which is a gesture of self-destruction, self-punishment, and self-sacrifice, was also an example of the same castration symbolism.

restrict the term to this exact definition and to no other conditions of time or temperature. For we should forbid the use of the term "pasteurised" to any other form of heat treatment. In practice far more milk is heat treated by "flash" pasteurisation —i.e., heating for a very short time, measured in fractions of a minute, to a much higher temperature, usually a variable temperature, than is heat treated under the above definition. Such treatment has no health objective, it is merely a trade practice to allow the milk to reach its destination in a saleable condition. This raises the practical question as to whether all forms of heat treatment other than designated pasteurisation is to be prohibited. Undoubtedly this could not be done at once, as suitable plant takes time to install, while without some form of heat treatment milk losses would be enormous, particularly in the warm seasons, so bacteriologically contaminated are many milk consignments as now delivered to these milk depôts.

The following is a random sample from our laboratory of 10 samples all collected one day (May 5th, 1930) as delivered to one milk depôt in Somerset. All the milk is at once mixed and is flash pasteurised, summer and winter. All the samples were milked that day, and all were only a few miles from the depôt (Table I.).

TABLE I.

Source.	Organisms per c.cm.	*B. coli* per c.cm.	Marking.*
Farm—			
A, Low Ham ..	672,000	3000–10,000.	Very bad.
B, " " ..	3,400	Less than 10.	Very good.
C, " " ..	8,400	"	"
D, High Ham ..	172,000	Over 10,000.	Very bad.
E, Low Ham ..	424,000	"	"
F, " " ..	10,200	10–30.	Good.
G, " " ..	1,136,000	3000–10,000.	Very bad.
H, " " ..	12,300	10–30.	Good.
J, " " ..	168,000	Less than 10.	Poor.
K, High Ham ..	848,000	100–300.	Bad.

* The so-called standard of Grade A milk—i.e., not more than 200,000 bacteria per c.cm. and no coliform bacilli in 0·01 c.cm. is often adopted as "good" so far as milk is concerned. It is forgotten that this standard is framed on the basis of the sample being collected "at any time before delivery to the consumer." To comply with this condition samples collected at the farm must have a bacterial content very far below these figures. An entirely different standard is necessary for samples collected at the cowshed or as for the above when sampled within a few hours of milking. This mistake is constantly being made in published reports, and milk samples are recorded as up to Grade A standard, the time factor since collection being entirely ignored.

Pasteurisation Problems.

At the present time not only is any type of heat treatment allowed but there is no obligation to disclose the fact, and, indeed, it never is disclosed to the general public. There is nothing to prevent milk distributors heat treating milk more than once, and there is evidence that a certain amount of milk is so heated.

The difficulties of imperfect pasteurisation plant can be got over by the enforcement of a time limit, for it is obviously illogical to permit the continuance indefinitely of an admittedly unsafe and imperfect procedure. Since the public has a right to know if it is being supplied with heated milk, all heat-treated milk should be required to be adequately labelled—i.e., either as "pasteurised" milk or with some other suitable designation, such as "heat-treated milk not inspected," after the expiration of the time limit for unsuitable pasteurisation, the latter label would disappear.

The problems of designated pasteurisation do not end with a definition of time and temperature conditions. The official description quoted above also states: "The type of apparatus used for pasteurising and the methods employed shall be such as are satisfactory to the licensing authority." Pasteurisation is a technical process of considerable complexity, and while machines may be designed to carry out official regulations it does not follow either that they will comply with scientific requirements, that if satisfactory at first they will remain efficient, or that as operated they will be worked to attain and maintain efficiency. In U.S.A., where the practical experience of pasteurisation is so extensive, considerable trouble on the technical side has been met with and has given rise to much discussion.

For example, Putnam[3] describing commercial pasteurisation plants in Chicago enumerates five groups of defects which may be found. The first dead-ends at the outlets, the milk in these parts being raised, or kept, at the required temperature. A second defect is leakage through valves; another is due to the collection of foam (a mixture of milk and air) in the upper part of the holder pasteuri which fails to receive the adequate temperat treatment. Approximately 30 per cent. of Chicago positive holder pasteurisers showed defect. The fourth is the use of continuous-flow holders. The last defect mentioned is the huma element, as the author recognises that after ever mechanical defect has been remedied, ignorance improper working methods may result in defect heat treatment. Frank, Moss, and Le Fevre[4] discuss these defects and their remedies. It is agr that, except as regards the human factor, th defects can be obviated, but their possibility sh how important is adequate technical control efficient inspection.

Economic and Administrative Considerati

The economic effects of any system of compul pasteurisation demand very careful consideratio

The first is the question of direct additional c We cannot manipulate milk without cost and all it is passed on to the consumer. While pasteurisation is comparatively inexpensive, hold type pasteurisers of efficient type are expensive cost anything upwards from £150 or so. The po bility of this as a charge on a small distributor considered below. The running charges are material. The Interim Report[1] already quot states: "In cases where the process has b separately costed, pasteurisation, including clari ing and cooling, is normally the most import single item in the wholesaler's expenses. The e mates of this cost which we have received vary fr ½*d*. to slightly below 2*d*. per gallon. Most gener it has been calculated at about 1¼*d*." This app to all types of pasteurisation and not only to more expensive holder variety. An offset to thi the saving on soured milk.

The most important administrative considerat in relation to compulsory pasteurisation is its e upon the present systems of milk distribution. S knowledge of these conditions is an essential part the problem, I have studied it in detail in the lar of the 17 rural areas in the County of Somerset, in which dairy work is the main rural industry. I much indebted to Mr. H. R. Day, the milk inspect for obtaining the necessary details. In this a (Axbridge Rural District) I have particulars of milk producers.

MILK PRODUCTION AND DISTRIBUTION IN AXBRIDGE RURAL.

The size of the herds vary greatly per farm as shown in Table II.

Practically two-thirds are quite small men with under 20 cows, and, of course, some of these are dry cows. Their milk is distributed in a variety of ways, and

TABLE II.

tal dairy cattle under 5	68	Small 65·3 %
" " " 5 to 9 (incl.)	173	
" " " 10 " 19 "	247	
" " " 20 " 29 "	133	Medium 27·9 %
" " " 30 " 39 "	75	
" " " 40 " 49 "	34	Large 6·8 %
" " " 50 " 59 "	9	
" " " 60 and over	8	
	747	

hese have been analysed carefully in the returns, ll made after special visits to the farms, and may e grouped as follows (Table III.):—

TABLE III.—DISTRIBUTION OF THE MILK.

	Number of Producers.		Percentage.
ld to a factory depôt	337	....	44·1
ld to a small local distributor ..	156	....	20·4
nt direct out of the county to a town distributor	102	....	13·3
vered by the producer	67	....	8·8
de into cheese or butter (including a very few in which mainly kept for stock)	102	....	13·3
	764		

Some variation with season occurs—i.e., some make cheese in e summer and sell in winter; but the figures represent the ts at the time of inquiry, dealing with the main method of posal.

hat is called in the Table a "factory-depôt" repre-nts a marked feature of the milk business in merset, there being between 50 and 60 of them the county. Those in the particular district udied with several in adjacent rural areas taking lk from this district are nine in number. While ey vary in size and in the amount of milk they ndle, the latter varying from about 600 gallons to 00 gallons or so per day, they have certain features common. The milk is in part fetched by lorries n by the milk companies owning the depôts, part brought in by the farmers themselves. stly delivery is twice daily; in some cases day deliveries are accepted. At these depôts e milk is mixed, usually cleaned, always cooled and ways pasteurised, summer and winter, with one ception. In these particular depôts in all but two e pasteurisation is by "flash" process, practically controlled as regards any exactitude of working control. In two there is a type of holder process. e latter is really uncontrolled also, since neither any automatic recording temperature charts nor there any outside supervision of the plant. In no stance is the milk sold under the Ministry of Health ence as "pasteurised." Their pasteurisation is tirely for trade purposes. From these depôts the lk is sent away to large towns or, if a surplus, viated away to other centres for condensed milk, ed milk, cheese manufacture, &c. Several, not nnected with other depôts, utilise their surplus to ke cheese. The smaller local distributors form an eresting group. When they develop considerably ey pass into the depôt type, but usually it is possible arly to separate the type.

Table IV. gives particulars of some of the smaller stributors in this area, while the last two in the ble are definitely of the milk-depôt type with ecially built premises and a considerable milk rnover.

In the third group the milk is sent direct by rail motor lorry to a town—Bristol, Cardiff, London, &c. is almost invariably cooled (98 cooled, 4 not cooled) nd is usually only despatched once a day. At the town it forms part of an urban distributors supply and may be sold unpasteurised with its identity distinct or may be mixed with milk from many other sources, pasteurised and distributed. The area studied is not very far from Bristol, so the proportion (13·3 per cent.) of milk so dealt with is probably considerably higher than from the county as a whole.

TABLE IV.

Distributor.	Milk dealt with.	Heat treatment.	If collect milk themselves.
A	9 farms.	None.	No; producers bring it in.
B	4 "	"	" " "
C	34 "	"	Collect part.
D	61 "	Flash P.	"
E	25 "	None.	"
F	12 "	"	Collect some.
G	1000–3000 gal.	Flash P.	Collect a considerable part.
H	700–1800 gal. per day.	"	" " "

No cooling plant. None of these distributors bottles upon the premises.

In 67 instances the milk is purveyed by the producer. For the most part these producer-distributors sell only their own milk, but in some cases they take the output from another farm. If they expand sufficiently to dispose of the milk from a number of farms they pass insensibly into the second group and there is no absolute dividing line. In this group there is no heat treatment at all. It is surprising, however, to note that slightly over 50 per cent. did not even cool their milk. They distribute the milk shortly after collection and without any manipulative treatment beyond straining. Some take great care over production, but with the majority their methods and practice are at the ordinary low level. The price at which they sell is not based upon costs but upon the ruling milk price, so since their distribution costs are usually low the undertaking is fairly profitable.

The area investigated is a cheese-producing district, so over 13 per cent. are cheese (and butter) makers only. Although a little designated milk (Grade A (T.T.)) is sold in the area, only one of the 764 milk producers has a licence for the production of a designated milk (Grade A).

Permissive Compulsory Pasteurisation.

The above facts as to the distribution of milk from a particular area will help us to visualise the effect of any system of compulsory efficient pasteurisation. There are no inherent difficulties in the way of the larger milk depôts installing efficient pasteurisers. On the other hand, the milk handled by the small local distributors is not large enough to enable them to install and work efficient pasteurisation plants and probably nearly all of them would have to go out of business. The same applies to the 8·8 per cent. purveyed by the producers. Excluding the cheese makers these two groups form 33·7 per cent. of the whole, while they probably handle more than one-third of the milk produced. While many of their methods are far from satisfactory their total elimination would be a loss. Their existence serves indirectly as a powerful means of keeping down milk prices, as an alternative to selling to a combine. Some of them have built up excellent milk distribution businesses by personal attention and by some measure of selection from farms where cleanly methods are practised. Their milk has an identity which is prized and valued by, at least, some of their customers.

I consider that any system of universal compulsory pasteurisation of milk is impracticable. U.S.A. is repeatedly quoted as the home of pasteurisation, but it is commonly forgotten that general pasteurisation only applies to the large towns and that 90 per cent. of milk consumed in rural areas is unpasteurised. In view, however, of the apathy of the agricultural interests and their failure to operate any satisfactory system of eliminating bovine tuberculosis there is a strong case for granting permissive powers to urban areas above a certain size (for example, to cities and county boroughs) to require all the milk coming into their area, or produced and consumed in the area, to be either efficiently pasteurised or to be from herds certified free from tuberculosis and produced under cleanly conditions (Certified or Grade A (T.T.) milk).

The granting of such powers would need new legislation. Mere permissive powers of this kind alone are inadequate and the following are all conditions essential to efficient working of any scheme.

1. This permissive power should only be granted after inquiry by the Ministry of Health. The Ministry would have, for example, to prescribe a time limit to allow the trade to adjust itself to the new conditions. Also to be satisfied that the city staff was competent to control efficiently the pasteurisation plant within their area, and decide as to the control of pasteurisation plant outside the urban area. It would be necessary to prescribe certain conditions for plant, such as automatic temperature recorders not subject to unauthorised tampering.

2. The prohibition of all forms of heat treatment other than efficient pasteurisation for liquid milk coming into the urban area. Probably this could only be enforced after the expiration of a period of grace.

3. The simplification and encouragement of the production of clean milk from tuberculosis-free cows. The designated milk movement makes no real progress owing to many factors with which I have not space to deal. Simplification of nomenclature, unification of control, and veterinary assistance are all measures likely to assist this movement.

ITS ADVANTAGES.

I am of opinion that such a scheme of permissive compulsory pasteurisation for all milk in our large towns should be made legally operative. The main advantages are the following:—

(*a*) Some of our towns are keen and progressive as regards the quality of their milk-supply. These would be able to acquire valuable powers which would enable them to control and safeguard the milk supplied to their citizens. It has to be remembered that our large towns have *no* effective control over the milk supplied to them either as regards its general freedom from bacteria or as regards absence of tubercle bacilli. The powers they possess are almost entirely useless.

(*b*) The experience gained in the towns operating these powers would be invaluable both as to the efficient control of pasteurisation and as to the alleged advantages or disadvantages of the procedure. If found to be satisfactory it would be easy to extend these powers to areas of smaller size.

(*c*) It would mitigate the hardships of the smaller local dealers. Some would no doubt turn their attention to unpasteurised designated milks, others would probably be able to dispose of their milk outside the pasteurisation area. Some would no doubt sell to larger milk dealers with efficient plant.

(*d*) Great benefit would result from the obliteration, so far as these urban areas were concerned, of the present thoroughly bad system of heat treatment by inefficient methods and without any disclosure to the public of the fact. If the milk has to be transmitted any distance to a pasteurisation plant in an urban area it would have to be collected under reasonably clean conditions and adequately cooled. Of course, double pasteurisation would be prohibited. If the milk trade generally takes exception to this requirement it is as well to point out that their attitude has always been a denial of the fact that trade pasteurisation favours the utilisation of dirty milk. If this is a genuine standpoint there cannot be any hardship, for it is a scientific ascertained fact that reasonably clean milk well cooled will travel well and remain good amply long enough to convey it to any accessible urban area.

(*e*) The educational effect would be considerable while the inhabitants of such an urban area would only be supplied with milk made safe by pasteurisation or safe because it was supplied from clean herds free from tuberculosis. I am, of course, aware that in the last group there are risks of conveying Bruc infection and possibly other infectious disease, the risk is, I believe, a very small one.

Conclusion.

It is difficult to say if such a scheme would affect the price of milk in the area concerned. So much the milk consumed in our large towns is now pasteurised that it should not make any difference. may be suggested that the elimination of the smaller distributors will send up the price of milk. practice, however, it is rare for the small-scale distributor to charge a lower price than his competitors. He usually adapts his price to theirs and if his costs are less, retains a larger margin profit. Milk ought to be cheaper in the small towns with their own self-contained or adjacent mil supplies, but this is by no means always the case and there does not seem to be any close relationship between the cost of handling and the retail price.

The medical profession is often urged to emphas the need to drink more milk, and it is made a reproach that it does not do so. The milk trade fails to rea that it cannot do so with the present unsatisfactory conditions under which milk is produced and vended. Really safe milk is too dear and ordinary milk canno win medical approval. A larger consumption of mil would be of great help to milk producers, while i would be of decided benefit to the health of th community if the consumption per head was increased. Under such a scheme as the above the medical pro fession could vocalise their desire for an increase i milk consumption in the area included, and th would incidentally help to reduce the cost and so th price of milk.

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ROYAL DEVON HOSPITAL: PROPOSED ENLARG MENT.—The Royal Devon and Exeter Hospital is hop shortly to enlarge and reconstruct its out-patients' depa ment, to provide accommodation for mental cases, a d ment, to provide accommodation for materni department, and increased accommodation for materni department, and increased accommodation for materni

THE MEDICAL RESEARCH COUNCIL.

ANNUAL REPORT FOR 1929–30.

THE latest report[1] of the Medical Research Council opens with a discussion of the modern growth of medicine, which it sees as divided along wo main paths. On the one hand, the sphere of medicine has extended to include more and more of the problems of human life that depend for their olution on a better knowledge of the form and workngs of the human body. On the other hand, it has grown intensively by taking more and more fully nto its service the methods and resources of the primary sciences. The Council has to try to give ssistance in both branches of the work. Its report ncludes an account of research on the science of nutrition, the management of industrial life, the problems of deep diving and high flying, and the interplay of mind and body. Subjects depending closely on the ancillary sciences include radiology and radium therapy, the biological actions of light, chemoherapy, and filter-passing viruses. A factor which mposes heavy expense on the Council is the growing need for methods of precision in the measurement of new therapeutic agents—a work which requires ntensive laboratory effort from the immunologist, he physiologist, and the biochemist, and which is ll too apt to escape the recognition it deserves.

The Council has continued its policy of encouraging research on the clinical side and insists on the imporance of posts for young clinical workers. There is a movement in this direction all over the country.

MATERNAL MORTALITY.

The Committee investigating puerperal fever presented an interim report during the year. It was found that out of nearly 1600 deaths directly attributable to childbearing, nearly 40 per cent. were due to septic infection, and nearly 20 per cent. to various types of toxæmia. The major problems of the toxæmias appear to belong to deep-seated chemical processes which are not yet fully understood. Work on puerperal fever has concentrated more and more on the streptococci; this research is in active progress and is already giving guidance towards prevention. The report points out that the problem of puerperal fever is only one ever-present example of our helplessness in the presence of acute blood-poisoning as the result of any infected wound. There is at present more hope in prevention than in cure. The Council look for great things from the removal of Queen Charlotte's Hospital to a better site, where a special block for septic cases has been equipped with suitable bacteriological and biochemical laboratories. Experience has already shown that the mortality is reduced some 60 per cent. if cases are aggregated in a suitable environment for special study by a whole-time worker.

NUTRITION AND VITAMINS.

The annual reports of the Council have for many years given an account of steady progress in nutritional problems. The work has now reached a stage which demands careful organisation and high expenditure and is therefore concentrated in a limited number of laboratories. Much work has recently been done upon vitamin A, and especially upon its function of enabling the individual to resist infection. Messrs. Lever Bros. have arranged that the whole supply of a concentrate prepared by them shall be placed at the disposal of the Council for scientific purposes, and the Royal Air Force personnel have submitted to a controlled test of the value of vitamin A in the prevention of colds and other winter ailments. The staff of the London County Council have coöperated in another inquiry, to ascertain the value of the vitamin in the treatment of infective middle-ear disease after scarlet fever and in the prevention of the sequelæ of various fevers.

The Dunn Nutritional Laboratory at Cambridge was opened during the year under review. Here work has been done on the correlation between pigment and the effects of vitamin A. It has been found, for instance, that the good effects are obtained when material from the yellow part of the pheasant's-eye narcissus is used, but not with the white part. No regular correlation could, however, be found in the animal fats that are rich in vitamin A, and for a time interest shifted away from carotene in this connexion. Recent work by Prof. Von Euler in Sweden has suggested strongly that carotene is a precursor of vitamin A in the animal body, and Mr. Thomas Moore, D.Sc., working at the Dunn Laboratory, has shown that carrot, though it contains no vitamin A, can give rise to the production in the animal body of as much vitamin A as that contained in an equivalent weight of cod-liver oil.

Much progress has been made in the standardisation of vitamins, and the unit of vitamin D has been defined as the antirachitic potency of a quantity of a standard solution of irradiated ergosterol corresponding to 0·0001 mg. of the ergosterol used in its production.

AMŒBIC DYSENTERY.

Details of a prolonged study of amœbic dysentery are now being published in full. It has been found that the entamœba infecting the macaque monkey is identical with the *E. histolytica* of man, and the investigator has obtained remarkable power of control over the parasite. It can be introduced at will into a fresh simian host and eradicated by therapeutic means. Host and parasite can be separated or united at will, and any desired experiment can be made with either or both combined. All the monkeys have been kept as personal pets and their vigour and contentment are famous.

ALCOHOL AND FERTILITY.

The well-known experiments of Prof. Stockard have been repeated with critical care. About nine years ago a small group of healthy guinea-pigs was chosen and the stock has been maintained by in-breeding. In each generation a number of animals of both sexes has been exposed to alcohol daily. The diet has been standardised and the offspring have been carefully weighed and examined. On no essential point has it been possible to find any confirmation of Prof. Stockard's views. The litters obtained from alcoholic parents and their descendants have been as numerous and heavy as those from the controls, and have shown no excess of still-births or deformities and no transmitted defects of the kind described by Stockard. The conclusions which have been based on Prof. Stockard's results cannot therefore be upheld.

INSULIN.

It would have been expected that the demand for insulin would rapidly rise to a peak, but in actual fact it has risen at a steady rate during the whole period of seven years since its introduction, and the conclusion seems to be inescapable that very many patients who needed the drug in 1925 were not getting it. Moreover, the Council feels that even now the advantages of insulin treatment are not being afforded to all those who might benefit by it. It is also probable that many are not receiving it under proper conditions of biochemical control and dietetic balance, as there is a remarkable discrepancy between the success of insulin treatment in skilled hands and the static death-rate from diabetes in the country as a whole. The value of insulin is no longer open to challenge, but the death-rate calls for investigation. Even though insulin does not produce a cure and the death of the diabetic from any cause is likely to be certified as due to diabetes, there should yet be a steady decrease in the deaths from diabetes at early ages. This decrease does not reach the standard which the Council think it should in view of the value of insulin. The increasing mortality-rate among elderly diabetics indicates an absolute increase in the disease in this country. The Council propose during the coming year to inquire into the standard of success attainable under the best conditions.

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[1] H.M. Stationery Office. 1931. Pp. 138. 2s. 6d.

MEDICINE AND THE LAW.

Punishment of the Insane.

THE Court of Appeal last week allowed an appeal in curious circumstances. Magistrates and judges, as is well known, may inflict a merely nominal punishment under the Probation of Offenders Act. Section 1 of the Act of 1907 names a number of grounds on which the conditional release of an offender may be permitted; one of these is the health or mental condition of the person charged. A person charged at Liverpool Assizes in 1929 pleaded guilty and was bound over in his own recognisances to be of good behaviour for two years and to remain in a mental institution until discharged therefrom. The judge had presumably taken into account the offender's mental condition as contemplated by the Act. Before, however, the offender entered into his recognisances, he was certified insane. He subsequently broke the condition of his recognisances by escaping from the institution. Thereupon, as contemplated by Section 6 of the 1907 Act, he was brought before the judge for failure to observe the condition, and he became liable to be sentenced for the original offence to which he had pleaded guilty at Liverpool. In these circumstances Mr. Justice Macnaghten passed a sentence on him of 10 months' imprisonment. On appeal the Court of Criminal Appeal has quashed the sentence on the ground that the certification of lunacy raised a presumption of insanity which prevented the recognisance from being binding; this presumption there had been no evidence to displace. The report of the case does not state whether certification took place before the plea of guilty. If those concerned were aware of the certification, there might have been a question of the accused's fitness to plead. But unfitness to plead is something more than certified lunacy. Moreover, the result of a finding that an accused person is unfit to plead may be indefinite confinement as a criminal lunatic; there is a natural tendency to shrink from this result. It will be noted that certification did no more than raise a presumption of insanity as regards the accused's capacity to enter into a binding contract in the matter of the recognisance. Even an insane person, confined in an asylum, is taken to be capable of making a valid will, if there is evidence of a lucid interval at the critical period or evidence that the insane delusions were irrelevant to the subject matter of the will.

On the general question of the punishment of the insane, the Atkin Committee (appointed after the respite of Ronald True's sentence in 1922) had much to say, especially in relation to cases where a verdict of guilty involves capital punishment. In this connexion there is interesting evidence given jointly by Sir John Anderson and Sir Ernley Blackwell on behalf of the Home Office before the Select Committee on Capital Punishment. The official view is that no person really insane is ever executed. Pressed with the suggestion that a murderer must be abnormal and "as nearly as possible insane," Sir John Anderson replied that such men are not so much abnormal as exceptionally wicked. "Why should a man who has no respect for human life be necessarily any more insane than a person who shows by his actions that he has no respect for property! There are lots of *those people, and no one suggests* they are insane."

A Chancery Judge's View of Insanity.

The notorious discrepancy between the medical and the legal views on the criminal responsibility of the insane needs no elaboration. Another recent case, in the Chancery Division of the High Court, illustrates the niceties of the legal view. In 1929 a man shot his wife and son dead and then immediately committed suicide. The verdict at the inquest was that he had murdered his wife and child, and had committed suicide while of unsound mind. The mother, who died intestate, had some small means; there was also a sum in the bank in the name of the son. A relative of the murdered woman claimed the estate. The claim was resisted by the administratrix *of the suicide's estate. The claimant* relied upon the rule that it was contrary to public policy that anyone should benefit by his own criminal act. The rule is that a murderer cannot claim any benefit under the will of the person he has murdered, and Mr. Justice Farwell would have been quite willing to apply the principle to the present case where there was no will *but an intestacy.* He came to the conclusion, however, that a man who had been an affectionate husband and father could not murder wife and son without some mental disturbance. The coroner's inquisition, said the judge, was not evidence on the question whether the husband was sane or insane. He himself must disregard the verdict of the coroner's jury when he approached that question. Basing his conclusion apparently upon no stronger foundation than the fact that an affectionate husband and father had killed his wife and son, Mr. Justice Farwell drew the inference that the man was insane at the time. If so, the man was not responsible for his actions, and his estate could not be deprived of benefit. According to the present law of property £1000 therefore goes to the husband's estate and the residue to the next of kin. By the usual legal presumption the son was deemed to have survived his mother and thus the father's estate took such money as the son possessed.

The significance of this case is that a High Court judge has taken a common-sense view rather than the rigid legal view about insanity. In effect the judge says that, if the man had not committed suicide but had been placed upon his trial for murder, the plea of insanity would rightly have succeeded. He forms this view rather upon a generalisation than upon the consideration of any such body of conflicting medical evidence as is usually placed before the court in such cases upon a trial for murder. He finds insanity where the coroner's jury found no insanity. He assumes, doubtless, that a man does not suddenly become insane in the brief interval between murdering his family and committing suicide. In other words, one of His Majesty's judges has inclined towards the medical rather than the legal view.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

WHEN SHOULD ANTI-TETANUS SERUM BE GIVEN?

NOT long ago a doctor omitted to give a prophylactic injection of anti-tetanus serum to a person who died of tetanus. The price paid for this omission was a big sum in damages awarded against the doctor who, had he been wiser or more cynical, would have reasoned that an injection of anti-tetanus serum may be prophylactic in more senses than one. The problem, to inject or not to inject anti-tetanus serum as a precautionary measure, would seem to be quite insoluble if all parties concerned are to be satisfied. The doctor who argues that in any given case the chances of his patient developing tetanus are infinitesimal, and who accordingly holds his hand, may one day be obliged to pay terrific damages to the cost of which none of the hundreds of patients whom he has saved from the discomforts of anti-tetanus serum will contribute a single sou. On the other hand, the doctor in whose mind the above-mentioned damages loom heavily, and who gives prophylactic injections of anti-tetanus serum as a matter of routine whenever a patient comes to him with a scratch, is liable, sooner or later, to be accused by individuals and insurance companies of exploiting this measure to his own profit. *Que faire?* Is every doctor to be a law unto himself and decide every case on its own merits to the best of his judgment? Or should some corporate body lay down certain general rules behind which the practitioner may shelter, both from the claims of the relatives of the patient who has died for want of an injection, and from the aspersions of those who regard wholesale preventive inoculations as a device for increasing the doctor's income and the insured worker's leisure? These questions are not merely of local interest; they are common to every country where tetanus exists. In France the problem has become so burning that the Academy of Medicine, on the initiative of Prof. Hartmann, has appointed a commission composed of Profs. Hartmann, Balthazard, Auvray, Mauclaire, Gosset, Roux, J. L. Faure, Vaillard, Vallée, Bazy, and Walther to study it and to frame rules of conduct for the guidance and protection of practitioners. Such guidance is of course already to be found in text-books. But the protection an authoritative statement by the Academy of Medicine can give in this matter should prove effective, from whichever side the practitioner may be threatened.

THE SUMMER HOLIDAYS.

Another knotty problem which the Academy has lately been asked to unravel concerns the French school-child in the latter half of July. Is he or is he not to languish at his desk or face his examiners during a fortnight which is almost always hot and sultry? The overburdening of the school curriculum in France has lately attracted general attention, and the critical fortnight is only part of a bigger question. In presenting his report to the Academy on behalf of the Commission on the overloaded educational curriculum, Dr. Le Gendre pointed out that for years schools have broken up on or before August 1st, and that virtually the summer holidays already begin with the national fête of July 14th, only prizemen or examiners continuing to attend school. France having such a wide range of temperatures and climates, it might not, he thought, be fair to impose on the school-child grilling in Marseilles in July the same curriculum that might be bearable in Briançon, fanned by mountain breezes. Hence his suggestion to give education committees in different parts of the country a certain latitude in choosing the hours of work and rest for their scholars. The Commission has recommended the Academy to declare that the excessive temperature often experienced in the second fortnight in July, but sometimes occurring earlier, may hamper mental work and injure the health of the less resistant. The Academy is also invited to recommend a change in the scholastic time-table in excessively hot weather so that intellectual work is not done between 11 A.M. and 4 P.M. The daily application of cold water in some form or other is recommended.

BIRDS AS CARRIERS OF BRUCELLA.

On Feb. 10th a report was presented to the Academy by Dr. H. Violle who, in conjunction with Dr. Montus, has infected various species of birds with *Brucella abortus*. They were led to suspect birds as carriers of this germ by the observation that undulant fever sometimes occurs in human beings in areas where infection by the hitherto known sources can be definitely excluded. Intramuscular injections of brucella into three pigeons were followed by the death of one of them in three days. The two survivors were well when killed seven days after the injections, but the germ was recovered from the blood, heart, spleen, and liver of one of them. Of two chaffinches similarly inoculated, one died 48 hours later, its blood and spleen yielding a pure culture of brucella. The other, which was in good health, was killed a week after the inoculation, when its organs still contained brucella. Similar results were obtained with thrushes. The fact that birds, including migrants, may harbour brucella is the more significant as they are immune to quarantine regulations and sanitary cordons which sheep and goats may be forced to respect. Dr. Violle drew a rather alarming picture of the pigeon living in contact with manure infected with the urine of diseased sheep, goats, and cattle, and transmitting the infection to human beings either by direct contact with their soiled feet, or in the process of preparation for human food.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

HEALTH IN JAIL.

THE report on the prison administration of Burma for 1929 records health statistics "even less favourable than those of the previous year," thus drawing attention to the fact that Burmese prisons occupy an unenviable eminence in this respect. There are often unavoidable reasons for heavy morbidity- and mortality-rates in jails in particular areas. It would not be fair for instance to compare, without qualification, some fever-stricken districts in Bengal with the healthier parts of the Deccan, and epidemics or famine may account for an exceptional increase anywhere, but a comparison with most Indian provinces certainly shows the Burmese prisons in an unfavourable light. Mortality in Indian jails during 1929 varied between 8·1 per mille for the United Provinces and 17 for Assam, as compared with 27·4 for Burma. The figure for Madras and Bombay is a little over 10 per mille, Bengal and the North-West Frontier Province in the neighbourhood of 12, the Central Provinces and Punjab between 13 and 14, and Bihar and Orissa 15·9. A disquieting feature is that the Burmese figures are not exceptional, judging by the record of the last five years. A frequent cause of uneasiness to superintendents of prisons is overcrowding, and it is obvious that the recent political disturbances must have thrown a great strain on the accommodation available in many areas. Burma, however, has been less affected than India proper by political disturbances, and although it is mentioned that a number of jails were not free from overcrowding during part of the year, additional accommodation for 1302 prisoners was provided, and the Inspector-General states that at the end of the period overcrowding had ceased to exist. That diet on the whole was sufficient and good in quality may be taken for granted, and the fact is confirmed by a reasonable average increase in weight of the prisoners. Water-supply is evidently a difficulty in certain of the prisons, and in some cases resort was had to chlorination. Conservancy, as in the great majority of up-country Indian prisons, is generally of the dry-earth type, and soakage pits for urine are in general use.

THE BURMESE JAIL POPULATION.

The daily average strength was 19,956. Of the 546 prisoners who died, 215 were admitted to jail in good health. Amongst causes of death dysentery comes first, with 1106 admissions and 145 deaths. Tuberculous diseases were responsible for 248 admissions and 134 deaths. Thus these two diseases accounted for more than half the total mortality. It was not a bad cholera year, and malaria, though there were a considerable number of admissions, was not a large cause of death (0·59 per mille). Burma, as a rice-eating country, is subject to beri-beri, but there were only 28 admissions for this disease, with one death. Some of the prisoners contracted beri-beri while detained in local lock-ups under trial. This shows the necessity of keeping a careful check on dieting under such conditions. There were 3440 admissions for ankylostoma infection, and seven deaths were attributed to this cause. It is recorded that 6·70 of the convict population were opium consumers. The prison at Bhamo returned the almost incredible percentage of 87·85 of opium addicts; but this habit is notoriously one of local prevalence. It is interesting to note that punishments show a large decrease for the year, and that the Borstal system, and other modern means of dealing with juvenile offenders, are receiving attention. The Salvation Army has made itself responsible for some juvenile adult criminals, and a prisoners' aid society is in operation in Rangoon.

BOMBAY JAIL MORTALITY.

The Bombay mortality figure of 10·3 per mille admits of little criticism from a sanitary or hygienic point of view; but even this figure is above that of the previous two years, for each of which the rate was only 8·6. The increase was due to the prevalence of influenza in part of the Deccan, and malaria following exceptional floods in Sind. The principal causes of death were pneumonia (33), pulmonary tuberculosis (17), dysentery (9), out of a total of 136 deaths for the year. The daily average strength was 13,204. There was no serious overcrowding. Prisoners' aid societies have been formed, and religious and moral instruction is given in many centres. An experiment with the boy scout movement has been started at a juvenile jail.

THE FIGURES IN ASSAM JAILS.

Although still high, the figures for Assam are considerably lower than in most of the last ten years. With a daily average of 2470 there were 42 deaths (17 per mille). Leaving out 1921, in which the mortality amounted to 35·4 per mille, and one or two other exceptionally bad years, there has been an almost continuous improvement. Here again the principal causes of death were dysentery (13) and tuberculosis (13). When special attention was directed to the water-supply at Sylhet it was found that the municipal arrangements for chlorination were defective; efficient chlorination in the jail resulted in a rapid diminution of cases. All Assam jails have now been ordered to chlorinate their water-supplies. Many of the tuberculosis cases were suffering from the disease on admission. Malaria only accounts for 113 admissions and one death, ankylostomiasis for 14 admissions. There is no prisoners' aid society in the province, and no mention is made of a Borstal institute, or other special provision for juveniles.

SUGGESTIONS FOR IMPROVEMENT.

No one can study reports of the average Indian jails without being impressed with the solid good work which has been put into these institutions, and the fact that from nearly every material point of view most of them continue to improve. It would be interesting however to observe the effect of a uniform chlorination of water-supplies. Water-borne disease still seems to bulk too largely in many mortality returns. As regards social and moral uplift there is perhaps more room for comment. Subject to the maintenance of discipline, nothing but good could result from the sort of amenities which have been introduced into some American and British prisons; such civilising privileges as books, music, lectures, and even plays might well be utilised to a greater extent than at present. The Indian prisoner is responsive to influences of this kind.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

THE CENSORSHIP BOARD AND SCIENTIFIC BOOKS.

UNTIL recently the Censorship Board of the Irish Free State, in its relations with books as distinct from periodicals, had dealt mainly with two classes of book—namely, modern fiction and works which advocate the unnatural prevention of conception. The latter class is prohibited specifically by the Act, and the Board has no duty except to decide that a certain work does as a matter of fact advocate such procedure, and the work is ipso facto prohibited on the report reaching the Minister. In regard to other works the prohibition of which they recommend the Censors must form the judgment that the work is obscene or indecent, and in coming to such judgment they must take into consideration the general tendency of the work. Opinions will differ about the propriety of their judgment in regard to many of the works condemned, such as, for example, Mr. Aldous Huxley's "Point Counterpoint," Mr. Sinclair Lewis's "Elmer Gantry," and Mr. A. P. Herbert's "Water Gypsies." But in the last list of books, the circulation of which is forbidden in the Irish Free State, one finds a purely scientific study, Mr. Havelock Ellis's "Psychology of Sex." It is difficult to understand how any body of reasonable men can find such a book obscene or indecent in its general tendency. If such works are to be prohibited on such a ground there seems to be no limit to the meddlesome activities of the Censorship Board. It is true, of course, that it is within the power of the Minister for Justice to grant a permit to a student to import a book which is prohibited to the general public. One can see no justification, however, for placing unnecessary obstacles in the way of serious students, and it can hardly be denied that Mr. Ellis's studies are such as are necessary to all students of psychology and psychopathology.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

COÖPERATION OF HOSPITALS.

IN the ninety-sixth annual report of the Glasgow Royal Maternity Hospital it is interesting to read that "as a result of recent legislation, hospitals maintained by the parish council have now passed into the control of the Corporation of Glasgow. The arrangements for sending cases to Stobhill Hospital to relieve the congestion in the wards has continued to work smoothly, and under the new régime beds in other municipal hospitals may now be utilised for this purpose. A further increase in the number of municipal beds available for the treatment of septic cases has enabled more satisfactory arrangements to be made with the medical officer of health for the removal of such cases from the hospital." The arrangement spoken of was made some years ago and has now developed into precisely the kind of coöperation that Sir John Gilmour, Secretary of State for Scotland, contemplated when the new Act was framed.

At the annual meeting of the directors of the hospital Prof. T. H. Bryce referred to the rapid extension of maternity services. Some 10,000 cases, he said, had been treated in the hospital last year, which was a considerable increase over 1929. For every woman who applied for admission in the old days, they now had four or five. They had provided for the care or the admission of all these patients and had not shut the door to a single person. This result would not, however, have been possible without the coöperation of the public health authorities and the public assistance committee.

THE RED CROSS.

Addressing the Edinburgh branch of the British Red Cross Society at its annual meeting Colonel Mackenzie, D.D.M.S. for the Scottish Command, raised the subject of a new military hospital for Edinburgh. The present one in the Castle is, he says, inadequate and unsatisfactory from many points of view. The War Office look with sympathy on the proposal to build a new hospital at Redford, where the Edinburgh garrison is stationed, but they cannot promise money at the moment.

The Voluntary Aid Detachment last year had a total of 268 members, of whom 120 were mobile, and also 48 probationers were undergoing training. They had several emergency calls for assistance from hospitals, and in each case this was given. In addition several members of the V.A.D. assisted at child welfare clinics.

THE UNMARRIED MOTHER.

At the annual meeting of the Edinburgh Home for Mothers and Infants the President (Harriet, Lady Findlay) said that during the year 38 girls were in residence and 27 babies. The average stay in the case of the girls was four months and the babies three months. The average age of the girls on admission was 21 years, but two girls of 13 and 14 years were admitted. Thirteen of the girls had been in domestic service; 10 had been living at home; two were factory workers; and five were in other employment. On leaving, 14 took up domestic work, 12 returned to their homes or friends, and two went to other homes. The training given to the younger girls in general housework proved valuable. Eleven babies were boarded with foster mothers, five went to homes for babies (four of the mothers taking service in the homes), and seven returned with their mothers to their own homes or friends. Happy family relationships had been established between the child and its own mother and the foster parents, but the finding of desirable homes was still a difficulty. The Home has done good work for many years and has maintained the policy of keeping the young mother and her child together as long as possible.

TREATMENT OF MENTAL DISORDERS.

In presenting the annual report of the Royal Edinburgh Hospital for Mental and Nervous Disorders Prof. G. M. Robertson, physician-superintendent, said that the progress made in the treatment of the sick in mind during the last quarter of a century had been amazing. It might be summed up in two words, "de-asylumisation" and "hospitalisation," developments in which Scotland had played a leading part. Certification was a cruel barrier to early treatment. Within the mental hospital emphasis must be placed on voluntary treatment as opposed to certification. The physicians of mental hospitals also could never fulfil their destiny of preserving mental health and of preventing mental disorder so long as they confined their efforts to intramural treatment. They must enter into the life of the community. The Jordanburn Hospital had been an old building, and to modernise it by new sanitation, central heating, electric lighting, a verandah for fresh air treatment, and a new entrance, cost £20,000. In addition the out-patient department cost £10,000; the endowment of a Chair of Psychiatry, £10,000; and the lecture theatre £8000. To purchase and fit up the clinic for the young cost an additional £2000. There was thus a total expenditure incurred during the last 12 years of £50,000. At the Mental Hospital itself, consisting of Craighouse and West House, the most notable change in the 12 years was the hospitalisation of the institutions. Some members of the Royal Commission appointed to inquire into the state of mental disorder in England could scarcely believe that the majority of their patients at the mental hospital came to them voluntarily. Yet such was the case. This gratifying result was mainly due to a realisation by the public of the fact that a mental illness was very much like a bodily illness, and that if taken in time and suitably treated recovery from it might be expected.

SHROPSHIRE ORTHOPÆDIC HOSPITAL.—The Shropshire county council have increased their contribution to the Shropshire Orthopædic Hospital from £700 to £1000 a year in consideration of the work the institution is doing for defective children of the county.

CORRESPONDENCE

IRRADIATION OF SCHOOL-CHILDREN.

To the Editor of THE LANCET.

SIR,—A paper by Sir Leonard Hill and Dr. A. R. Laurie, published in THE LANCET of Jan. 24th, deals with an experiment on school-children at Derby. An introductory section mentions the earlier experiment, carried out at a Willesden school by Dr. Dora Colebrook, and comments unfavourably on some of its features. We know Sir Leonard Hill too well to suspect him of intending the criticism of Dr. Colebrook which this statement might easily be taken to imply. No mention is made of the Medical Research Council's Committee on the Biological Action of Light, which promoted this experiment, accepted the report on its results, and unanimously recommended its publication. As fellow-members of that Committee with Sir Leonard Hill, it seems to us only just that the following facts should be made clear.

(1) The recommendations of an experiment on these lines, and of Dr. Colebrook as an investigator suitably qualified for its conduct, were made by Sir Leonard Hill to the Light Committee, who accepted the recommendations, and obtained from the Medical Research Council a suitable grant for the purpose.

(2) The Light Committee left the planning of the experiment to Sir Leonard Hill and his staff, in consultation with Dr. Colebrook. The source of the rays, the method of application and the dosage, were adopted by the Committee entirely on Sir Leonard Hill's recommendation, and the Committee understood that the installation and running of the lamps were under the supervision of his staff. We can understand that, after the experiment had been finished, and its negative results had been presented, doubts may have arisen in Sir Leonard's mind as to whether the radiation had been too severe, or too rich in short rays. If this was the case, the Light Committee, acting on Sir Leonard Hill's advice, were responsible for the defect, and not Dr. Colebrook.

(3) It appears to be suggested that Dr. Colebrook chose an unsuitable school. Our memories on this point agree, in suggesting that Dr. Colebrook, after many unsuccessful attempts to arrange the test in other neighbourhoods, brought the Willesden proposal before the Committee as one affording the coöperation she required from the authorities, and that the Committee accepted it. If similar facilities had been available in a "slum" school, it might indeed have given a greater chance of showing the beneficial effect of artificial radiation, on children whose natural exposure was obviously and notoriously deficient. According to our memories, again, this was *not* the object of the experiment. The Light Committee were not, in fact, concerned to make a case for the treatment by repeating the familiar demonstration of the equivalence of ultra-violet radiation to the administration of vitamin "D." The object of the experiment, in our view, was to test the claim that regular irradiation of parts of the body normally covered by clothes has the general effect of increasing bodily and mental vigour and resistance to infections, even in persons who are not suffering from any unusual defect of sunlight. For this purpose it seemed, and seems, to us that the Willesden scholars provided a suitable test-material. Assuming, however, that a wrong choice was made, and that ultra-violet radiation was thereby deprived of a proper chance of showing effects other than those due to vitamin "D," the mistake was made by the Committee of which Sir Leonard Hill was a member, and cannot fairly be laid to the charge of Dr. Colebrook.

(4) Dr. Colebrook had, accordingly, in our view no individual responsibility for the choice of the community to be treated, or for settling or controlling the details of the treatment. She had two important responsibilities other than these: (*a*) It was her duty so to organise the experiment that the children treated with the screened arc provided a good, scientific control for those exposed to the whole spectrum. (*b*) It was her duty to collect the resulting data, and herself to provide those needing skill in medical examination. We do not think that anybody will call in question the care, thoroughness, and scrupulous impartiality with which Dr. Colebrook did her share in organising the trial and collecting the results.

The above facts are as well known to Sir Leonard Hill as to ourselves. We are convinced that it is only by inadvertence that the statement, in his paper with Dr. Laurie, is so framed as to seem to impute to Dr. Colebrook alleged defects in the Willesden experiment. If they were indeed defects, the whole Committee ought to accept the blame for them, and Sir Leonard Hill himself a greater share than the other members.

We are, Sir, yours faithfully,
H. H. DALE.
S. R. DOUGLAS.

National Institute for Medical Research, Hampstead, N.W.,
Feb. 25th, 1931.

VALUE OF RAMISECTION IN CASES OF SPASTIC WEAKNESS.

To the Editor of THE LANCET.

SIR,—The report on the value of ramisection in spastic weakness, signed by ten medical practitioners in Great Britain, and published in THE LANCET of July 19th, 1930, was of considerable interest to your readers in Australia and was the subject of a leading article in the *Medical Journal of Australia* of Oct. 11th, 1930. Dr. Royle's reply, published in your issue of Nov. 29th, has also received editorial notice in our pages.

My attention has been drawn by Dr. Royle to a letter from the pen of Mr. A. S. Blundell Bankart which appeared in THE LANCET of Dec. 13th, 1930. There is one point, and one point only, in Mr. Bankart's letter to which I wish to refer. Referring to Dr. Royle, Mr. Bankart states: "He starts badly by repudiating his one-time friend and colleague, J. I. Hunter, since he objects to our coupling the name of Hunter with his own." And again later: "Those who know the work of both men have little doubt that the operation of sympathetic ramisectomy would never have originated in Sydney without the help and inspiration of J. I. Hunter." That Mr. Bankart is mistaken is shown by the fact that in 1923, while J. I. Hunter was in Europe, Dr. Royle discussed with me in my office (I was then assistant editor of this journal) a new operation on the sympathetic nervous system that he was planning for the relief of spastic paralysis. Shortly after this Hunter returned from abroad and collaboration between him and Dr. Royle was begun. Thus the operation of ramisection did in fact originate in Sydney "without the help and inspiration of J. I. Hunter."

Although the facts that I have stated are sufficient to determine the question at issue, I should like to mention two other points. In the first place, when Dr. Royle and J. I. Hunter submitted to the *Medical Journal of Australia* the two first papers on this subject, published on Jan. 26th, 1924, my late chief, Henry William Armit, regarded Hunter's paper as inordinately long and likely to create the impression that the part taken by the latter was more important than that taken by Dr. Royle. Armit sent for Hunter and put it to him that, since he had played merely a minor part in the investigations, his paper should be altered. I was present at the time. With Armit's suggestion Hunter concurred at once.

In the second place, I should like to quote a sentence from an article on John Hunter contributed to the *Sydney Morning Herald* of Dec. 19th, 1924, by Prof. Edgeworth David of the University of Sydney. Sir Edgeworth David wrote: "Hunter emphatically charged me that, whenever I might be speaking of the surgical cure of spastic paralysis (a discovery which has shed such lustre on the Medical School of the Sydney University) I should always give the credit for the discovery to the man who, he said, really deserved it, Dr. N. D. Royle, who, as is well known, initiated the experiments which have already achieved so marvellous a measure of success."

With the remainder of Mr. Bankart's letter I am not concerned in this place, for I have, as already stated, dealt with the subject in my own editorial columns.

I am, Sir, yours faithfully,

MERVYN ARCHDALL, M.D.,
Editor, The Medical Journal of Australia.

Sydney, Jan. 22nd, 1931.

DISSEMINATED SCLEROSIS.

To the Editor of THE LANCET.

SIR,—The recent refusal of Miss K. Chevassut to accept the offer of the Medical Research Council of an opportunity of demonstrating a spherule in disseminated sclerosis under her own test conditions in another London laboratory has led to Sir James Purves-Stewart dissociating himself from further collaboration with her.[1]

This, together with Miss Chevassut's negative findings in a test series of cases submitted to her for examination, under arrangements made by the Medical Research Council, might create the erroneous impression that a spherule is non-existent. We ourselves, however, working independently, although unable to confirm a number of Miss Chevassut's findings, have repeatedly observed a spherule in spinal fluids from disseminated sclerosis patients. We are therefore willing to demonstrate it to any medical colleague who so desires. We are not, however, prepared to say that this is the only nervous affection in which the appearance can be seen.

Whether the spherule will ultimately prove to be a living virus or due to some biochemical precipitation, we are not yet in a position to express an opinion. We are, however, continuing research on the subject, and hope to publish our further observations in due course.—We are, Sir, yours faithfully,

JOHN A. BRAXTON HICKS,
F. D. M. HOCKING.

Westminster Hospital Neurological Research Laboratory,
Caxton-street, S.W., March 3rd, 1931.

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[1] THE LANCET, Feb. 21st, 1931, p. 440.

DIET AND DIGESTION IN ASTHMA.

To the Editor of THE LANCET.

SIR,—Any medical man who goes thoroughly into every case of asthma which he sees must have noted that in many of them some evidence of dyspepsia can be found. The commonest symptom is flatulence or a sensation of fullness after meals. Patients will volunteer the information that an attack is produced after a heavy meal, or a meal containing certain articles of diet, or that certain food is harmless at breakfast, but harmful at night, and so on. In some people certain foods will produce rhinitis, which in an asthmatic is almost sure to be the forerunner of bronchospasm; other foods will produce urticaria, others again, such as excessive milk drinking combined with a mixed diet, will produce catarrhal conditions of the mucous membrane of the respiratory tract. It is important to realise that an exclusive milk diet does not produce the same result as a combined milk and mixed diet. The former is sound treatment, the latter is bad inasmuch as food incompletely digested produces catarrh.

Asthma is apt to occur at week-ends. A person working hard through the week regards Sunday as a day of rest. He rises late, has a late breakfast, and in two to three hours has his Sunday dinner—usually a heavy meal. He then falls asleep in a comfortable chair before the fire and in due course he wakes up with asthma, neither of his two meals having been digested. Another person enjoys his best meal of the day at 10 P.M. and is awakened with asthma at 2 to 4 A.M. The asthma in these types is due more to mechanical trouble than to the absorption of products of incomplete digestion. In these cases the stomach is distended with food and gas, which impede the free movement of the diaphragm, and this will inevitably produce spasm. Vomiting will immediately cut short such an attack. Many cases of this type are cured by simply correcting their habits.

The other type in whom inefficient digestion is chronic requires more attention. It is in this type that many of the manifestations of asthma are likely to be found, such as nasal catarrh, polypi, ethmoiditis, subsequent sinusitis, allergy, calcium deficiency, indicanuria, and most other symptoms which are stated from time to time to be the cause of asthma. The absorption of incompletely digested food products will produce practically all of these sequelæ, which will disappear with the more thorough digestion of the food, except of course in conditions such as polypi sinusitis or formed pus. Early nasal catarrh and mild ethmoiditis will improve and disappear. The aim of treatment is to allow of the food taken being completely broken down into its end-products before absorption.

In the early days of treatment it is often advisable to omit from the diet food which the patient knows from experience will produce discomfort. Meals should be taken dry; adequate water drinking between meals obviates thirst. Three meals are taken in the day with an interval of five hours between them, digestion of one being practically complete before the next is taken. The third meal, to be taken not later than 7 P.M., is chosen for its digestibility. Digestives are given, such as papain, combined with iridin and pepsin, but the preparation which I have found most efficacious is the panteric tablet, which dissolves in the alkaline secretions of the lower bowel; two tablets after each meal, although one is occasionally sufficient. This line of treatment, together with a rational dietary, such as that advocated by Adam, of Glasgow, will usually produce marked improvement in the digestion within a week or ten days.

Milk is considered by many members of the medical profession to be a safe article of diet in health or sickness. But the so-called colds from which many children appear to suffer is nothing other than catarrh due to excessive milk drinking combined with ordinary food. If such a child be taken completely off milk this condition clears up in a week or two. The effect of this harmful diet in children is to produce an overgrowth of lymphoid tissue, and the production of enlarged tonsils, adenoids, and glandular weakness. The tissues become clogged with partly assimilated food. Whilst the condemnation of milk as part of the general diet may appear to be revolutionary, I would strongly urge those who have to treat cases of asthma to give serious consideration to this point, for whilst an asthmatic is taking large quantities of milk the result is apt to be very disappointing.

I am, Sir, yours faithfully,

F. T. HARRINGTON, M.R.C.S., L.R.C.P.

Newcastle-upon-Tyne, Feb. 20th, 1931.

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—The great weight carried by the signatories to the letter in your issue of Dec. 15th, 1930, undoubtedly makes one hesitate to question their views on pasteurisation, but I venture to suggest that there are important points to consider.

First, the question of vitamins. A short time back no one was aware of their existence; is it not possible that there are other vitamins or their equivalent half-sisters existing in milk? Some changed state in milk there certainly is after it has been pasteurised; the difference can be sensed by nose and tongue, and it will go sour much quicker than sound unpasteurised milk. Granted that drinking pasteurised milk may cause no apparent harm during adolescence, may it not be the precursor of certain phases of later disease such as premature caries.

Secondly, the method of pasteurisation, for the milk must be evenly heated, not overheated in one place and underheated in another. It is questioned by many whether pasteurisation as carried out commercially does completely sterilise the tubercle bacillus. Diseased milk is contaminated either from the cow or from man. The main dangers from the cow arise either from bovine tuberculosis, mastitis, or contagious abortion. The danger of undulant fever from the last named is still, I believe, a matter on which the medical mind is open.

One would have thought that the causative bacteria of bovine mastitis (excluding T.B.) conveyed by milk would be a frequent source of disease in man, considering that herds of milk-cattle on farms are rarely free from mastitis either in the acute or chronic form. The commoner bacilli of bovine mastitis include both staphylococci and streptococci, and of the latter both the hæmolytic and non-hæmolytic varieties. Although these may sound formidable sources of trouble, it can be confidently asserted that cocci which are pathogenic to cows' udders are non-pathogenic to man. The only danger would arise when the udder infection was of human origin.

I believe that the pasteurisation or non-pasteurisation of milk requires further consideration. Would it not be more helpful to endeavour to improve the quality of milk at its source, in a way similar to that in which our water supply is treated, rather than to endeavour to clean milk, already bacteriologically dirty, by pasteurisation? I have been informed on good authority that some of the victims of the recent outbreak of septic poisoning, traced to milk as the vehicle, were regular drinkers of so-called pasteurised milk.

I am, Sir, yours faithfully,

Feb. 28th, 1931. WILLIAM S. STEVENS, M.R.C.V.S.

ANÆSTHESIA IN CHILDBIRTH.

To the Editor of THE LANCET.

SIR,—The decision (mentioned on p. 495 of your last issue) of the Central Public Health Committee of the London County Council to give effect to my plea made on Nov. 25th "that light anæsthesia should be provided in hospitals under the Council's control" marks a quite radical change of policy for cases of normal labour. I wish to distinguish *very clearly, as I did at the Committee, between general* anæsthesia and *light* anæsthesia. The amount required to enable the mother "to use her pains," as the midwives tell her, is very small. In many middle-class patients it is self-administered in emergency and allows the patient to be fully conscious between the pains. Its administration should eventually be possible by a trained nurse.

I am, Sir, yours faithfully,

Chiswick, Feb. 27th, 1931. STELLA CHURCHILL.

SEX DETERMINATION.

To the Editor of THE LANCET.

SIR,—May I give the details of a case I have recently attended. The woman who had previously had two children, a boy and a girl, had a normal menstrual period starting on March 6th, 1930, which lasted (as usual) seven days. She had intercourse with her husband on March 28th, the only time for several months, neither was there any after. She had an abortive period (one day only) on April 3rd, the day she had expected it to appear, and she gave birth to a 7 lb. male child on Feb. 21st, 1931. The length of gestation from the date of intercourse was 330 days—i.e., 47 weeks and one day. Intercourse took place during the maximum girl time period according to Lady Erskine. This woman's other two children were each born about a month late according to the ordinary calculation from the beginning of the last menstrual period. In neither case were they post-mature: one weighed 5¼, the other 6¾ lb.

I am, Sir, yours faithfully,

Redhill, Feb. 25th, 1931. L. J. BARFORD, M.D.

CHEMICAL IMPROVERS IN BREAD-BAKING.

To the Editor of THE LANCET.

SIR,—According to our Food Act no person shall sell to the prejudice of the purchaser an article of food which is not of the nature, not of the substance, and not of the quality demanded by the purchaser. On referring to a leading article which appeared in THE LANCET of March 19th, 1927 (p. 609) dealing with the report of the Departmental Committee on the Treatment of Flour with Chemical Substances one reads:—

> "There are bakers, the Committee state, who wish to know the nature of the materials they are using, and who want flour and not a mixture of flour with something else."

As bearing upon this question let me quote from a letter which I received from the general secretary of the Operative Bakers, Confectioners and Allied Workers. His lament is "unfortunately we were unable to produce any proof that the use of chemical improvers was injurious to the consumer." Here the question of injury to the consumer so far as the baker is concerned is entirely irrelevant. The baker clearly has the right to demand and to have "flour and not a mixture of flour with something else."

That bread made of flour with which so-called chemical improvers have been incorporated is far from wholesome there cannot be a doubt. The crust is usually tough and leathery, difficult to cut and difficult to chew, and the interior is doughy and badly baked. As a matter of fact, and quite apart from the untoward chemical changes produced directly by the so-called chemical improvers themselves, the bread baked under such circumstances is not easy of digestion; an article of food partaken of daily for any length of time which is more or less indigestible is bound, sooner or later, to be a cause of ill-health. On medico-scientific grounds alone it is incumbent upon our Minister of Health, in the interest of the health of the people and especially of the children, to prohibit forthwith the use of so-called chemical improvers in flour for bread-baking.—I am, Sir, yours faithfully,

JAMES OLIVER, M.D., F.R.S. Edin.

Harley-street, W., Feb. 24th, 1931.

CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—I am glad to see that Dr. M. H. Gordon has pointed out the considerable evidence which exists as to the value of type sera in the treatment of cerebro-spinal fever. Those who had to deal with these cases in the Army are well aware of the great advance in the treatment which was rendered possible by Dr. Gordon's researches and the typing of the organisms which became a systematic procedure. It is, therefore, lamentable that at the present time type sera are not available in this country either for diagnostic or for treatment purposes. It is to be hoped that the Ministry of Health and the Medical Research Council will speedily see that the same facilities are available for the civilian population as were available during the war for the Army.

With regard to Dr. J. A. Glover's comments, there appears in them to be some confusion between temporary and chronic carriers. I think there is very little doubt that the discovery of chronic carriers in an institution is of great importance. Dr. Glover's remarks appear to refer chiefly to multiple cases scattered throughout barracks or institutions. Where, however, the cases are localised to one portion of an institution, the investigation of carriers is of considerable importance and the general hygienic measures mentioned by Dr. Glover, if solely relied upon, will not necessarily remove the risk of further cases occurring. I have had, for instance, lately an instance of two cases in a single hospital ward in an institution; in this case obviously the investigation of single possible carriers was of the greatest importance, the general hygienic measures as mentioned by Dr. Glover being already in force. Dr. Glover has not mentioned the possibility of immunisation with a vaccine against the meningococcus, and I am inclined to think that in large institutions with multiple cases occurring in various parts of the institution this means of defence will eventually prove to be the most valuable.—I am, Sir, yours faithfully,

A. H. G. BURTON,
Medical Officer of Health, Ilford.

Public Health Offices, Ilford, March 3rd, 1931.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 21ST, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 250 (last week 221); scarlet fever, 1629; diphtheria, 1231; enteric fever, 114; pneumonia, 2501; puerperal fever, 60; puerperal pyrexia, 111; cerebro-spinal fever, 78 (last week 52); acute poliomyelitis, 1; acute polio-encephalitis, 1; encephalitis lethargica, 12; dysentery, 36; ophthalmia neonatorum, 71. No case of cholera, plague, or typhus fever was notified during the week.

The 78 cases of cerebro-spinal fever were notified from the following 20 counties: London, 5; Chester, 1 (Birkenhead); Derby, 2 (Buxton and Chesterfield R.D.); Durham, 1 (Houghton-le-Spring R.D.); Essex, 2 (East Ham); Kent, 1 (Gillingham); Lancaster, 3 (Liverpool 1, Chorley R.D. 2); Leicester, 1 (Blaby R.D.); Middlesex, 3 (Tottenham, Uxbridge, and Hendon R.D.); Northumberland, 4 (Newcastle 2, Newbiggin-by-the-Sea 1, Wallsend 1); Oxford, 1 (County Borough); Southampton, 4 (Portsmouth 3, Aldershot 1); Suffolk East, 1 (Ipswich); Surrey, 2 (Croydon and Frimley); Sussex East, 2 (Brighton); Warwick, 1 (Birmingham); Yorks West Riding, 41 (Barnsley 2, Rotherham 1, Sheffield 1, Adwick-le-Street 1, Birstal 1, Bolton-upon-Dearne 1, Greasbrough 1, Hemsworth 4, Maltby 7, Rawmarsh 1, Shelley 1, Swinton 1, Thurnscoe 1, Wath-upon-Dearne 1, Worsborough 1, Doncaster R.D. 2, Hemsworth R.D. 10, Thorne R.D. 4); Caernarvon, 1 (Llandudno); Glamorgan, 1 (Cardiff); Monmouth, 1 (St. Mellons R.D.).

Of the 114 cases of enteric fever 91 were reported from the county of Essex, distributed as follows: Chingford, 1; Epping, 72; Ilford, Leyton, Romford each 1, Walthamstow, 8; Woodford, 1; Epping R.D., 6.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 24th–25th was as follows: Small-pox, 219 under treatment, 5 under observation (last week 190 and 7 respectively); scarlet fever, 1177; diphtheria, 1923; enteric fever, 237; measles, 122; whooping-cough, 332; puerperal fever, 32 (plus 17 babies); encephalitis lethargica, 120; poliomyelitis, 1; "other diseases," 149.

Deaths.—In the aggregate of great towns, including London, there was 1 (0) death from small-pox, 1 (0) from enteric fever, 97 (2) from measles, 8 (2) from scarlet fever, 44 (12) from whooping-cough, 48 (11) from diphtheria, 55 (9) from diarrhœa and enteritis under two years and 509 (106) from influenza. The figures in parentheses are those for London itself. Seven deaths from meningococcal meningitis occurred in London—four under 1 year, two from 2–5 years, and one from 55–65 years.

The death provisionally classified to small-pox was assigned to Leicester C.B. The fatal case of enteric fever outside London occurred at Hull. Twenty-five fatal cases of measles were reported from Liverpool, 15 from Newcastle-on-Tyne, 11 from Birmingham, 7 from Hull, and 5 from Sunderland. Portsmouth reported 3 deaths from whooping-cough. Diphtheria claimed 12 victims at Liverpool, 3 at Hull. The 403 fatal cases of influenza outside London are scattered over 88 great towns: 21 were reported from Manchester, 19 from West Ham, 18 from Birmingham, 13 each from Bolton and Preston, 12 from Cardiff, 10 each from Swindon, Hull, Gateshead, and Newcastle-on-Tyne, 8 each from Plymouth, Liverpool, Bradford, Sheffield, and Darlington, 7 each from Nottingham, Middlesbrough, Rhondda, and Swansea, 6 from East Ham.

The number of stillbirths notified during the week was 315 (corresponding to a rate of 47 per 1000 births), including 59 in London.

DEATH FROM VARIOLA MINOR IN LEICESTER.

THIS was a female infant, aged 10 days, born on Feb. 4th, apparently healthy. A small-pox eruption appeared on the 11th, and by the following day the child was thickly covered. Some of the spots were hæmorrhagic; the child passed blood per rectum, and died in a convulsion on the 14th. Dr. C. Killick Millard, medical officer of health for the city, who sends us this information, remarks that the child must have been infected in utero. Previous cases of minor small-pox had occurred in this house, traceable to an overlooked case, and the mother herself developed the eruption two days before confinement, having had slight symptoms of malaise a few days previously. It is of interest to note, Dr. Millard adds, that this is only the second death from variola minor which has occurred in Leicester since 1904—i.e., 27 years ago. The other death occurred early last year in a baby 3 weeks old (see THE LANCET, 1930, i., 357).

OBITUARY

ALBERT HENRY BYGOTT, M.D.Lond.

THE death of Dr. Bygott on Feb. 21st in his 63rd year at his home in Bury St. Edmunds means the loss of an outstanding personality in the public health service. His early struggles as a medical student are known only to his contemporaries who learned to admire his endurance under privation, his dogged perseverance, and his capacity for self-denial. Matriculating in 1887 he studied at Queen's College, Birmingham, and St. Mary's Hospital, London, qualifying L.S.A. in 1893, when he at once commenced practice in Birmingham. His natural genius in medicine and in surgery were quickly recognised and he was the idol of his poor patients. In those days hospital accommodation was much more limited than now, and Bygott achieved extraordinary things in the way of urgent operations in poor homes. On the top of the work of a heavy practice he piled continuous study and he obtained the M.B. Lond. in 1900, and in the following year when the Birmingham guardians turned their poor-law medical staff into a whole-time service he accepted the position of district medical officer for the Bordesley district. In the quieter atmosphere of an official appointment Dr. Bygott soon made short work of the completion of his academic ambitions, taking the M.D. Lond. in 1902, the D.P.H. (Birmingham) in 1903, and becoming a barrister of the Middle Temple in 1905.

DR. BYGOTT.

[*Photograph by Jarman.*

His real sphere was obviously preventive medicine, and he seized the opportunity to enter the public health service when his friend Dr. R. A. Lyster, who had recently been appointed Hampshire's first medical officer of health, invited him in 1908 to become assistant county officer. Bygott threw himself whole-heartedly into the task of introducing medical inspection into the schools and progressive public health ideals into a county where organised medical work of any description was previously unknown. Teachers all over the county still remember the striking personality of the new school doctor, his tactful ways of overcoming difficulties and opposition. Subsequent promotion was rapid. He was appointed medical officer of health to Barking in 1909, and moved from there in 1912 to become county medical officer for West Suffolk, a position he occupied until his death. For these 18 years Dr. Bygott took a catholic interest in everything which even bordered on health and hygiene and one scheme after another in the county came to life under his vigilant eye. His interest in child welfare was especially keen, and the lectures which he gave to mothers were always well attended. He took up the orthopædic scheme promoted by the county education authority, and it was largely due to his enthusiasm that many children with defective limbs were enabled to become self-reliant citizens. He had a share in outlining the scheme for dental treatment which resulted in the appointment of a county dentist. It was characteristic of him that he was never content with any concession which he obtained, using it merely as a stepping-stone to further advance. He was always critical of the facilities for in-patient and out-patient institutional treatment and never lost an opportunity, as a member of the advisory committee to the Labour party, of emphasising the need for improved organisation of medical services in the county. To his clinical colleagues he stressed the conception of the hospital as the centre of the medical life of the area, and his suggestions for the better utilisation of the services of the junior members of teaching school hospitals claimed respectful hearing. He specially deplored the lack of interest in the child of school age, recalling his own experience as school medical officer when ascertaining that only 5 per cent. of the children found defective on medical inspection had been taken to a medical man for treatment. In the years immediately following the war, realising the practitioner's difficulty in getting away from duty, he endeavoured to arrange a scheme of exchange during the summer months between practitioners in town and rural districts. While work in the country needed no recommendation, he thought, to the town practitioner, he emphasised the fact that the country practitioner might engage in some form of post-graduate study, while his wife would find many things of interest in a busy town.

Dr. Lyster writes: "There is no doubt that Bygott continuously overworked. He loved his work so much that he could not bear to let anyone do things for him, and he delegated grudgingly. He had found for years that his capacity for work and endurance was unlimited and that he could dispense with relaxations, and hobbies, and holidays, and he made the fatal mistake of thinking that he could go on indefinitely. Two years ago he had an attack of what was then diagnosed as influenza but was really encephalitis and he never recovered. He could not contemplate life without his beloved work, and so the advice of his friends who implored him to retire, and to try the effect of prolonged rest and change, fell on deaf ears. His work was his life, and when he found his chances of holding on to his work were fading away his life ended.

"A man of the highest courage, physical, mental, and moral, he could always face an issue calmly and fearlessly. Few realised what a lovable man hid behind that shy, sensitive, and abrupt manner, but to those who were privileged to share his friendship Bygott was a beloved companion whose instincts were generous and whose capacity as a loyal and devoted comrade was endless."

Dr. Bygott married in 1901 and his widow survive him.

ARTHUR LAMBERT, M.D. Camb.

THE death of Dr. Arthur Lambert, in his home at Harrow-on-the-Hill, came as an unexpected shock to both school and town. He died just as he was about to start on his round on Feb. 12th.

Sydney Herbert Arthur Lambert was born in 1867 at Georgetown, Demerara, British Guiana. Educated there at Queen's College under Exley Percival, an able old Etonian, he won the Colonial Scholarship, and went to St. John's College, Cambridge, in 1884. He took the natural sciences tripos in 1887, studied medicine at St. Mary's Hospital, and qualified with conjoint and Cambridge degrees in 1892 and 1893. He became house physician at the Brompton Hospital, and thereafter took a short travelling holiday. In 1894 he settled down to work at Harrow, where he remained until his death. He joined the firm of Briggs and Bindloss in 1894 as assistant, and in 1896 as partner. In 1916, when Dr. Bindloss retired from the practice, Dr. Lambert became senior partner and medical adviser to the Headmaster of Harrow. In this capacity he was mainly responsible for the health of the school, besides having a growing practice outside. His fine powers were tested severely during the influenza epidemic of 1918, when, almost alone in Harrow, save for one assistant, he had to cope with the illness of 400 boys in the school, a large proportion of the school staff, and innumerable cases in the town. Accommodation was insufficient and nurses were not to be had, yet only one boy in the school died. "For years," writes a colleague, "it had been Lambert's ambition to have a new and adequate sanatorium for the growing needs of the school; and when at last, only a year ago, the new sanatorium on Sudbury Hill was opened, he said, 'Now I shall die happy.' The school was as much to him as he to the school. As a practitioner he had a quick eye for the finer points of diagnosis, and was gifted with that medical instinct which only comes as the reward of knowledge and experience. He was, indeed, the very finest type of practitioner; he gave freely of his skill and personal sympathy to rich and poor alike. His life was one of unbroken service, which he loved to give; the work had become so much part of himself that he literally feared the day when he should have to withdraw from practice. His patients were all his friends; to many he was their best friend. So appreciative of the troubles and difficulties of others, you would think he never had any of his own; so simple and unassuming, one hardly knew how big a man he was till he was gone. In a busy practice for 36 years, he never lost touch with the progress of medicine, but always kept in contact with the best medical and surgical opinion and practice. Laziness, meanness, or avarice he simply did not understand; always believing the best of human nature, he called forth the best in everyone."

Dr. Lambert married in 1899 Edith, daughter of the Rev. W. Orde Newnham, and she survives him.

PANEL AND CONTRACT PRACTICE

Changing the Doctor.

In the House of Commons last week Mr. Gossling asked the Minister of Health whether the recent change in the medical benefit regulations by which insured persons must give longer notice of their wish to transfer from one insurance doctor to another was made with the approval of the British Medical Association. Miss Lawrence (Parliamentary Secretary to the Ministry of Health), in reply, stated that the appropriate steps were taken to bring this proposal to the notice of the Association as soon as the Minister had formed the opinion that any further protection of insurance funds which could be secured by this means ought to be secured without avoidable delay. The whole subject was fully discussed at the annual conference of local medical and panel committees in October, and a resolution was passed requesting the Minister to defer the consideration of the matter for a year. The Minister was sensible of the importance which attached to the principle of free choice of insurance doctors by insured persons, but complete freedom of choice was not accorded by the regulation which had now been amended. The matter was therefore, Miss Lawrence concluded, one of degree, and the Minister had decided that it was his duty to take action without interposition of any prolonged period of delay such as had been suggested to him on behalf of the Association.

Fitness for Marriage.

A doctor asked the Worcestershire Insurance Committee at its last sitting for advice in the following matter. A curious point, he wrote, has come before me. A panel patient comes to me who is "sure he is perfectly well" but wants me to examine him thoroughly because he has "become engaged to be married." Does this come within the scope of general practitioner service under the Acts? The writer went on to say that he always encouraged repeated medical examinations of an insured person when in sound health, but he foresaw that the demand for certificates of fitness for marriage might render panel practice almost impossible to carry out. Can we charge a fee for such examination, he asked, and if so what fee? The insurance committee being in doubt what to reply referred the matter to the local medical and panel committee which discussed it fully and passed the following resolution:

> The panel committee are of opinion that to give a decision as to whether a patient is fit for marriage would, in the majority of cases, involve examinations which can be conducted only by specialists, and as such services are outside the scope of medical benefit, the panel committee consider that the question of such an examination should be left to the discretion of the insurance doctor who is consulted.

The point is one that is likely to arise in other areas.

"A Modern Jeremiad."

Dr. Leslie Trotter (Ledbury, Herefordshire) writes: "The anonymous practitioner referred to in your issue of Feb. 21st (p. 442) is too sweeping in his condemnation of the panel system. Though I do not suppose any panel doctor would try to maintain that the system was perfect, I think most would agree that it is a very great advance upon any contract system that was in existence before. I cannot speak for conditions in industrial districts, having had only a very brief experience of them soon after the Insurance Act of 1911 came into force; but as regards this rural district it has always seemed to me that with a reasonable amount of goodwill on both sides—doctor and patient—the system has worked fairly satisfactorily. Of course, panel patients seek advice more often than private ones; but that is only human nature, and is to be expected. It is—in my opinion—a distinct advantage in many cases for patients to seek advice early, as panel patients do, for it is easier to get them right quickly. With regard to the oft-repeated complaint about the limitation in one's scope in prescribing expensive drugs, it does not appear to have struck some doctors that there are certain private patients who can ill friend a copy of a debate in the Legislative Assembly which showed that the Government of India had then decided to summon a Conference to inquire into the most suitable centre for the proposed central medical research institute and other matters. This conference was held in July and passed a resolution (the official Members not voting) that a central medical research institute on the lines advocated by the Fletcher Committee should be located at a University centre as soon as financial conditions permitted. The Government of India are considering this resolution, but anticipate that it will not be possible to bring the institute into existence either at Dehra Dun or elsewhere so long as the present financial stringency continues.

Royal Veterinary College.

Sir GEORGE COURTHOPE asked the Minister of Agriculture whether a grant would be available from the Development Fund towards the cost of reconstructing the Royal Veterinary College; upon what conditions it would be made; whether any further grant would be available from other funds; and whether he was aware that in the event of the total sum required being unobtainable the college would not be able to continue its educational work.—Dr. ADDISON replied: The Treasury have sanctioned grants from the Development Fund amounting in all to £150,000, provided that the Governors obtain from other sources a sum of £100,000. Other conditions are attached to these grants, and I shall be happy to supply the hon. Baronet with a statement of them if he so desires; but they raise no difficulty, and have been accepted by the Governors. The hon. Baronet is no doubt aware that the Governors have themselves raised a sum, which I understand is now slightly above £50,000. I can only add that I am well aware of the difficulties of the College.

Proposed Facilities for Doctors' Cars.

Mr. HORE-BELISHA asked the Minister of Transport whether, in view of the urgent nature of calls made on doctors, he would consider allowing a distinctive sounding horn on their cars, as in the case of ambulances, so that the police in control of traffic would be enabled to afford them special facilities for proceeding on their way.—Mr. H. MORRISON replied: Fire engines and ambulances are vehicles which are readily recognisable, and both the police and the general public do what they can to facilitate their expeditious passage when answering a summons. There is no distinction in appearance, however, between a doctor's car and an ordinary private car; and I should deprecate any attempt to establish a priority of right of way by the use of a distinctive type of motor horn or any other similar means, as such a course would be open to serious abuse.

THURSDAY, FEB. 26TH.

Nursery Schools.

Mr. FREEMAN asked the President of the Board of Education the present number of nursery schools established; which were open-air schools; and what was the total number of children in attendance; and whether he would publish a list of authorities who had taken advantage of their powers in providing nursery schools.—Mr. MORGAN JONES (Parliamentary Secretary to the Board of Education) replied: There are 44 recognised nursery schools in England and Wales, of which 34 are open-air schools, while nearly all the others have good open-air facilities. My right hon. friend is unable to state the actual numbers in attendance at these schools, but altogether they provide accommodation for 3076 children. A new edition will shortly be published of the Board's list 42, which gives the names of recognised nursery schools and shows which of them are provided by local education authorities. I am sending my hon. friend a list of those authorities which have taken steps to provide such schools.

Mental Condition of Two Boys.

Mr. LOVAT-FRASER asked the Minister of Health if his attention had been called to the case of Ivor Clifford Thompson and Ronald James Thompson, of Milford Haven, who, after a conviction for stealing a bicycle, were committed to a mental institution as mentally deficient; and if he would inquire into the mental condition of the boys.—Mr. GREENWOOD replied: The two persons named were undergoing detention in Swansea Prison where they were certified by two qualified medical practitioners to be feeble-minded, but owing to the inability of the local authority to provide institutional accommodation or appropriate guardianship, they have not been dealt with under the Mental Deficiency Act.

Ministry of Health Journal.

Mr. SIMON asked the Minister of Health whether he would consider the desirability of publishing a Ministry of Health Journal on the analogy of the Board of Trade Journal and the Ministry of Labour Gazette.—Mr. GREENWOOD replied: This question has been considered from time to time, but I am not satisfied that the value of such a journal as the hon. Member has in mind would be sufficient to justify at the present time the additional labour and expenditure which it would entail.

National Health Insurance.

Mr. GOULD asked the Minister of Health the number of persons whose health insurance membership had been continued for another year as a result of the passing of the National Health Insurance (Prolongation of Insurance) Act, 1930.—Mr. GREENWOOD replied: Precise figures on this matter are not available, but in the Memorandum explaining the financial resolution on the Bill it was stated that it was estimated that between 60,000 and 100,000 persons would have their period of insurance extended as a result of the Bill.

Pasteurisation of Milk and Paratyphoid.

Mr. GRAHAM WHITE asked the Minister of Health whether he was making any arrangement to insure the efficacy of the pasteurisation methods used for the milk-supply of the country, with a view to reducing the number of cases of paratyphoid fever.—Mr. GREENWOOD replied: I am advised that the paratyphoid organism is easily destroyed by heat, and that any of the methods of treatment by heat in general use, if carried out with proper care, is effective in destroying this organism. Milk is not allowed to be sold as "pasteurised" unless it has been treated by the method prescribed by my department, and as this method is now being used to an increasing extent, I do not think it is necessary for me to take any special steps to encourage its adoption.

Paratyphoid in Essex.

Colonel HOWARD-BURY asked the Minister of Health whether the origin of the outbreak of typhoid in Essex had been discovered; how may cases had occurred; how many have proved fatal; and what steps were being taken to prevent a further outbreak. Mr. GREENWOOD replied: The inquiries made by a medical officer of my department, in conjunction with the local medical officers of health, appear to have shown that the origin of this outbreak of paratyphoid was one of the employees at a dairy farm who, unknown to himself, was suffering from the disease. 256 cases (including secondary cases) have occurred up to the present and there have been seven deaths. The preventive measures which were taken included the removal to hospital of the man considered to have been the source of infection, the cleansing and disinfection of the premises, milk utensils, &c., and the employment of a fresh staff of workers at the farm.

Pure Milk.

Mr. HURD asked the Minister of Health if he had considered the suggestion submitted to him that in order to encourage the supply of pure milk the Ministry should abolish the licence fees now demanded from producers who applied for permission to sell Certified or Grade A milk; and if he would adopt this suggestion.—Mr. GREENWOOD replied: I am not at present satisfied that the abolition of the licence fees for graded milk would have any appreciable effect upon the supply; but I will consider the matter in consultation with my right hon. friends, the Chancellor of the Exchequer and the Minister of Agriculture, and also with representatives of local authorities when opportunity occurs for the general revision of the Special Designations Order.

Vaccination and Small-pox.

Mr. CARTER asked the Minister of Health whether, in view of the conclusion arrived at in the recent report of the Rolleston Committee on Vaccination in regard to the necessity of trying to find some means of protecting against small-pox other than that of the direct introduction of a living virus into the organism, he would introduce a Bill at an early date to suspend the compulsory clauses of the Vaccination Acts, as had been done in Holland, until the experimental researches now in hand had been completed, particularly in view of the continued occurrence of deaths from post-vaccinal encephalitis after the use of Government lymph.—Mr. GREENWOOD replied: I have under consideration the whole subject of vaccination, but I cannot in present circumstances undertake to introduce legislation dealing with this question. I may point out that the compulsory requirements of the Vaccination Acts are in effect limited to infants under 12 months of age, and that in this class the occurrence of post-vaccinal encephalitis has been practically negligible, whereas I understand that in Holland the compulsory measure which has been suspended related to the vaccination of children at school age. I may add that since 1st Jan., 1930, a total of seven cases of post-vaccinal encephalitis have been reported, two of which have proved fatal.

MONDAY, MARCH 2ND.

Indian Medical Service.

Major GRAHAM POLE asked the Secretary for India whether it was proposed to make any alteration in the method of recruitment to the Indian Medical Service pending the enactment of constitutional reforms.—Mr. WEDGWOOD BENN replied: Not so far as can be foreseen at present.

Supply of Quinine in India.

Major GRAHAM POLE asked the Secretary for India the present position in the matter of the consultations between the Government of India and the Provincial Governments on the question of centralising the whole subject of cinchona cultivation and the manufacture and distribution of quinine, as suggested by the Royal Commission on Agriculture in India, as a first step towards the reduction of the price of quinine in India to a level at which it would be possible to embark on an extensive anti-malaria campaign.—Mr. WEDGWOOD BENN replied: The Government of Madras have expressed their agreement with the recommendations of the Royal Commission and their willingness to transfer their plantations and factory to the Government of India. The Government of Bengal wish to retain their plantations and factory in their own hands, and consider that in any case no change should be made until the future constitution of the Central and Provincial Governments has been settled. In the case of Burma no action can, of course, be taken, at least for the present, in view of the recommendation of the Round Table Conference in favour of the separation of Burma. I am sending my hon. friend a copy of the report recently received from the Government of India.

New Red Cross Convention.

Lieut.-Colonel FREMANTLE asked the Secretary for Foreign Affairs, whether, seeing that on July 27th, 1929, there were signed by representatives of Great Britain, the Dominions, and India one convention relative to the treatment of prisoners of war, and a new Geneva convention for the amelioration of the condition of the wounded and sick of armies in the field, he would say why these conventions had not been presented to Parliament with a view to ratification.—Mr. DALTON (Under Secretary for Foreign Affairs) replied: A number of legal questions have had to be examined in connexion with these two Conventions, one of which will require legislation to bring it into effect. The Conventions will be laid before Parliament very shortly.

TUESDAY, MARCH 3RD.

Deaths in Childbirth.

Mr. FREEMAN asked the Minister of Health the number of women who had died in childbirth each year since the war; what percentage of these deaths were estimated to be preventable; whether he had any information showing the number who received no prenatal supervision; and what was the proportion of deaths compared to those who did receive assistance.—Miss LAWRENCE (Parliamentary Secretary to the Ministry of Health) replied: The following statement shows the numbers of women in England and Wales who have died in childbirth attributed to pregnancy and childbearing in each of the years 1919 to 1929 inclusive: 1919, 3028; 1920, 4144; 1921, 3322; 1922, 2971; 1923, 2892; 1924, 2847; 1925, 2900; 1926, 2860; 1927, 2690; 1928, 2920; 1929, 2787. The figures for 1930 are not yet available.

My right hon. friend is advised that no reliable estimate can be formed of the proportion of maternal deaths in these years which were preventable, but he may point out that in their recent report the Departmental Committee on Maternal Mortality estimated that of the deaths brought under their notice, which they had no reason to suppose were other than fairly representative of the total, not less than one-half were preventable. No information is available in regard to the last two parts of the question, but the Departmental Committee record their opinion that while the number of women who receive antenatal supervision is increasing, there is still a large section of the population which does not realise the advantages of such supervision.

MEDICAL NEWS

Society of Apothecaries of London.

At recent examinations the following candidates were successful:—

Surgery.—J. M. Durr, Guy's Hosp.; J. H. Ferguson, Universities of Oxford and Harvard; J. S. Lane, Guy's Hosp.; and G. S. Rozario, King's Coll. Hosp.

Medicine.—C. L. Ferguson, University of Cambridge and London Hosp.; J. H. Ferguson, Universities of Oxford and Harvard; J. S. Lane, Guy's Hosp.; and R. Pakenham Walsh, University of Oxford and St. Mary's Hosp.

Forensic Medicine.—J. H. Ferguson, Universities of Oxford and Harvard; E. I. B. Hawes, St. George's Hosp.; W. G. Kingston, Middlesex Hosp.; S. E. Paterson, Edinburgh; R. Schauder, King's Coll. Hosp.; and C. F. Williamson, University of Birmingham.

Midwifery.—R. R. Clipstein, St. Mary's Hosp.; J. H. Ferguson, Universities of Oxford and Harvard; D. R. Rigg, University of Sheffield; and G. S. Rozario, King's Coll. Hosp.

The following candidates have been granted the Diploma of the Society entitling them to practise Medicine, Surgery, and Midwifery: C. L. Ferguson, J. H. Ferguson, and G. S. Rozario.

Oxford Ophthalmological Congress.

This Congress will meet at Keble College, Oxford, from July 8th-11th. The morning of the 9th will be devoted to the Diagnosis of Intracranial New Growths, when the speakers will be Mr. Leslie Paton, Sir Percy Sargent, Dr. H. M. Traquair, Mr. Norman Dott, and Prof. Artur Schüller (Vienna). In the afternoon Prof. G. Elliot Smith, F.R.S., will give an address on the Evolution of the Instruments of Vision. The Doyne memorial lecture will be delivered on the 10th by Mr. P. E. H. Adams, Margaret Ogilvie reader in ophthalmology in the University of Oxford. The other arrangements include an address by Prof. Bailliart (Paris) on Tonometry, and a discussion on Penetrating Wounds of the Eyeball, introduced by Mr. James Craig and Prof. Schüller. The hon. secretary of the Congress is Mr. C. G. Russ Wood, 12, St. John's-hill, Shrewsbury.

Instruction for the D.P.M.

The London County Council have published a syllabus of numerous courses now beginning at the Maudsley Hospital, Denmark Hill, S.E.5, and other hospitals for candidates for the Diploma in Psychological Medicine. Inquiries may be addressed to the director of the central pathological laboratory at the hospital.

University of London.

At a meeting of the Senate on Feb. 25th Mr. H. L. Eason, M.S., was reappointed to represent the University on the General Medical Council. It was resolved to institute a University (part-time) chair of medical psychology tenable at the London School of Hygiene and Tropical Medicine.

University of Edinburgh.

The Cameron prize for 1931 has been awarded to Madame Curie.

London Temperance Hospital.

It is announced that this hospital has received a gift of £32,000 from Mr. Samuel Insull, of Chicago, whose parents were formerly interested in its work.

Birmingham's Children's Hospital.

Pressure upon the accommodation last year was acute, and on Nov. 17th last there were 908 surgical cases awaiting admission; 823 of these were for tonsil and adenoid treatment in the day ward, for whom appointments had been given running into February, 1931. Owing to the prolonged industrial depression a large number of the patients were "definitely malnourished." The total number admitted to the general wards was 3001. A nurses' home containing 110 bedrooms, and the other usual accommodation is to be built at a cost of £41,000.

Hospital Extensions.

St. James's Hospital, Balham, is to be enlarged by the London County Council at an estimated cost of £137,350.—The centenary of Huddersfield Royal Hospital is to be marked by the erection and equipment of a new wing. It is proposed to provide a new casualty ward, a dispensary, a patients' waiting-room to seat 300, a self-contained unit for eye, ear, and throat patients, children's sections, &c. There will also be a radiological department, and the total cost is expected to be £90,000.—Lord Derby recently laid the foundation-stone of a new out-patients' department of Bootle General Hospital. The cost is expected to be £25,000.—Mr. F. H. Fox, the chairman, has formally opened a new wing of Wellington (Somerset) cottage hospital. The enlargement includes a private ward, a women's ward of eight beds, and additional domestic accommodation.

"Silver Paper" Valueless.

In view of the deterioration of tin-foil used for wrapping purposes and the consequent fall in value Aberdeen Royal Infirmary has discontinued its collection.

Workmen's Contributions to Mexborough Hospital.

At the annual meeting of this hospital it was stated that more than 75 per cent. of the income (£13,348) was contributed last year by work-people.

British Charities Association.

The amount contributed to hospitals by this association last year amounted to £27,634. Since its inception in 1923 distributions have been made to over 900 hospitals, £101,228 going to those in the London area and £100,486 to those outside.

Croydon Hospital Saturday Fund.

The sum of £4650 has been raised as the result of the efforts of the Croydon Hospital Saturday Fund. This is a record result.

York Hospital Sunday Fund.

The total balance of receipts of this fund for last year were £456 as against £502 in the previous year. There is a decrease of £45 in the church collections.

Glasgow Hospital for Sick Children.

This institution last year treated 5217 in-patients, and there were 23,468 out-patient attendances. It is proposed to create a completely equipped orthopædic organisation consisting of local clinics at suitable points in and around Glasgow and in the centre and west of Scotland; the hospital itself would be in direct association with the local clinics.

Hospital Costs.

Last year the in-patients (4450) of Bradford Royal Infirmary cost an average of £8 2*s.* 11*d.*, a decrease of 14*s.* The average cost of each occupied bed was £137 2*s.* 4*d.*, more than £6 less than in 1929. The average weekly cost of an in-patient was £2 17*s.* 7*d.*—At King Edward Memorial Hospital, Ealing, the weekly cost per in-patient was £3 1*s.* 10½*d.*, a fractional increase.—In the adjoining borough of Acton the in-patients (1304) cost £3 3*s.* 6*d.* per week, as against £3 16*s.* 6*d.* in the preceding year; the average stay was 15·1 days, against 13·88.—At the West Norfolk and King's Lynn Hospital there were 2042 in-patients whose daily average cost was 9*s.* 3*d*; their average stay was 11·4 days.

Maternity Hospitals.

Last year the Glasgow Royal Maternity and Women's Hospital treated about 10,000 cases, a large increase upon the previous 12 months.—Lady Camden recently opened the new Tunbridge Wells and District Maternity Home in Culverley Park Gardens, which has cost £6000. It will accommodate 25 mothers; last year there were 168 patients.—Councillor Miss M. E. Royle, chairman of the Willesden district council, recently opened a maternity hospital of 26 beds at Kingsbury standing in ten acres of grounds. The building, which has been entirely transformed, was formerly a small-pox hospital.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. C. T. Baxter is placed on the retd. list.

Surg. Lts. E. B. Pollard and J. C. Souter to be Surg. Lt.-Comdrs.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lt. W. H. C. Watson to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

W. A. Robinson to be Lt. (on prob.) and is secd. under the provisions of Art. 205, Royal Warrant for Pay and Promotion, 1926.

ARMY RESERVE OF OFFICERS.

Lt.-Col. W. Byam to be Lt.-Col.

Capt. H. B. Walker, from Supp. Res. of Off., to be Capt.

TERRITORIAL ARMY.

Maj. J. Walker to be Lt.-Col.

R. G. Karn (late Essex R.) and J. J. Myles to be Lts.

ROYAL AIR FORCE.

Dental Branch: Flying Officer M. J. Pigott is granted a non-permanent commission in this rank.

INDIAN MEDICAL SERVICE.

Capt. E. Benjamin relinquishes his temp. commn.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, March 9th.—5 P.M., UNITED SERVICES. Discussion: Minor Head Injuries. Opener: Squadron-Leader H. L. Burton. Other speakers will take part.

TUESDAY.—8.30 P.M., PSYCHIATRY. Joint Meeting with the Society for the Study of Inebriety. Discussion: The Prevention and Treatment of Drug Addiction. Openers: Dr. E. Mapother and Dr. F. C. Laughton Scott (Psychiatry); Dr. William Brown and Dr. Macdonald Critchley (Society for the Study of Inebriety).

WEDNESDAY.—5 P.M., SURGERY: SUB-SECTION OF PROCTOLOGY. Discussion: Ulcerative Colitis Excluding Tropical Diseases. Openers: Dr. Francis R. Fraser (Medicine), Dr. Cuthbert E. Dukes (Pathology), Mr. J. P. Lockhart-Mummery (Surgery). Other speakers: Dr. F. J. Poynton, Dr. Arthur F. Hurst, Dr. H. Letheby Tidy, Dr. Kerr Russell (Medicine), Dr. L. P. Garrod (Pathology), Dr. H. Graham Hodgson (Radiology), Sir Charles Gordon-Watson (Surgery). Members of the Sections of Medicine, Pathology, and Surgery are specially invited to take part in the discussion.

THURSDAY.—8.30 P.M., NEUROLOGY. Cinematographic Demonstrations: Dr. Stanley Barnes: A Case of Unusual Dissociation of Voluntary Eye Movement. Dr. Henry Cohen: Technique and Results of Encephalography and Ventriculography. Short Communications: Mr. O. Gayer Morgan and Dr. C. P. Symonds: Unilateral Ophthalmoplegia with Absent Tendon Jerks. Dr. Russell Brain: Grasp Reflex in the Foot.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Cases and Specimens: Mr. Cecil P. G. Wakeley: Generalised Neuro-fibromatosis. Dr. Bernard Myers: Essential Thrombocytopenic Purpura Hæmorrhagica. Dr. E. Stolkind: Polycythæmia Vera with Cerebral Thrombosis. Polycythæmia Vera with Nervous and Ocular Disorders. Dr. M. A. Cassidy: Post-mortem Specimens of Case (shown on Oct. 10th) of Abdominal Carcinomatosis with Probable Adrenal Involvement. Dr. Geoffrey Konstam: Vascular Spasm in a Female aged 15. Dr. F. Parkes Weber and Dr. M. Scholtz: Splenic Enlargement in Simple Achlorhydric Anæmia (L. J. Witts). Other cases and specimens will be shown. 5 P.M., OPHTHALMOLOGY. Clinical Meeting at the Middlesex Hospital, W. Tea at 4.30 P.M. Cases will be shown.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, March 9th.—8.30 P.M., Lord Dawson: Treatment of Pneumonia. Discussion.

SOCIETY FOR THE STUDY OF INEBRIETY.

TUESDAY, March 10th (see under Royal Society of Medicine).

WEST KENT MEDICO-CHIRURGICAL SOCIETY, Miller General Hospital, Greenwich, S.E.

FRIDAY, March 13th.—8.45 P.M., Dr. J. Forest Smith: Treatment of Goitre in General Practice.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, March 10th.—9 P.M. (at the Great Western Royal Hotel, Paddington), *Sir John Collie*: Medico-legal Pitfalls.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, Cavendish-square, W.

THURSDAY, March 12th.—8.30 P.M., Dr. Robinson: Organ Jargon.

BIOCHEMICAL SOCIETY.

FRIDAY, March 13th.—3 P.M. (at University College, Gower-street, W.C.) Annual General Meeting. Communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, March 9th.—5 P.M., Mr. E. C. Shattock: Specimens Illustrating Diseases of the Colon and Rectum.

FRIDAY.—5 P.M., Sir Arthur Keith: Specimens Illustrating the Anatomy, Physiology, and Pathology of the Œsophagus.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, March 10th.—5 P.M., *Dr. Macdonald Critchley*: The Neurology of Old Age. (First Goulstonian Lecture.)

AY.—5 P.M. (Second Goulstonian Lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, March 9th, to Saturday, March 14th.—Medical Society of London, 11, Chandos-street, Cavendish-square. Mon., at 4 P.M., Free lecture by Dr. B. T. Parsons-Smith: Early Diagnosis of Myocardial Insufficiency.—Prince of Wales's Hospital, Tottenham, N. Tues., Free demonstration in the Wards by Dr. Browning Alexander at 2.30 P.M.—St. Mary's Hospital, Paddington, W. Free demonstration in General Surgery by Mr. Zachary Cope on Thurs., at 11 A.M.—Royal Waterloo Hospital, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology for three weeks occupying afternoons and some mornings.—Royal National Orthopædic Hospital, Great Portland-street, W. Special Course in Orthopædics for two weeks, occupying mornings and afternoons.—West End Hospital for Nervous Diseases, Welbeck-street, W. Special Course of lecture-demonstrations in Diseases of the Nervous System. Daily at 5 P.M.—St. John's Hospital, Leicester-square, W.C. Special Course in Dermatology. Every afternoon.—Further particulars from the Fellowship of Medicine.

ROYAL INSTITUTION, 21, Albemarle-street, W.

Tuesday, March 10th.—5.15 P.M., Mr. C. D. Darlington: Cytological Theory of Heredity.

Thursday.—5.15 P.M., Prof. J. B. S. Haldane: Respiration.

Saturday.—3 P.M., Lord Rutherford: Alpha Rays.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Monday, March 9th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

Tuesday.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

Wednesday.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

Thursday.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

Friday.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith-road, W.

Monday, March 9th.—10 A.M., Gynæcological Ward, Genito-Urinary Operations. Skin Department. 11 A.M., Surgical Ward Visit. 2 P.M., Surgical Ward Visits. Operations. Medical, Surgical, Eye, and Gynæcological Out-patients.

Tuesday.—9.30 A.M., Operations. 10 A.M., Medical Ward Visit, Dental Department. 11 A.M., Throat Operations. 11.30 A.M., Surgical Demonstration. 2 P.M.; Operations, Medical, Surgical, and Throat Out-patients.

Wednesday.—10 A.M., Medical Ward Visit, Children's Medical Out-patients. 2 P.M., Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstrated.

Thursday.—10 A.M., Neurological Department. 11.30 A.M.. Fracture Demonstration. 2 P.M., Medical, Surgical. Genito-Urinary, and Eye Out-patients. 2.30 P.M., Operations.

Friday.—10 A.M., Medical Ward Visit, Dental Department, Skin Department. 12 noon, Medical Lecture. 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

Saturday.—9 A.M., Throat Operations. 10 A.M., Medical Ward Visit, Children's Medical Out-patients. Surgical Out-patients.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

Thursday, March 12th.—9 P.M., Dr. G. Hodgson: Value of X Rays in General Practice.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Agar-street, W.C.

Sunday, March 8th.—10.30 A.M., Dr. J. E. M. Wigley: Diagnosis and Treatment of Common Skin Diseases. 11.45 A.M., Dr. A. A. W. Petrie: Early Mental Symptoms and Their Treatment.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL, University-street, W.C.

Tuesday, March 10th.—5.15 P.M., Dr. E. W. Hurst: Disseminated Encephalomyelitis following the Exanthemata.

Wednesday.—4.15 P.M. (in the Large Lecture Theatre, No. 1). Dr. Charles Singer: The Evolution of Modern Ideas of Heredity.

CHADWICK TRUST.

Wednesday, March 11th.—5.15 P.M. (at the B.M.A. House, Tavistock-square, W.C.), Dame Louise McIlroy: Maternal Mortality.

BRITISH MEDICAL ASSOCIATION.

Friday, March 13th (in the Great Hall, B.M.A. House, Tavistock-square, W.C.), Prof. Edward Mellanby: Diet and Health. (Sir Charles Hastings Lecture.)

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

Wednesday, March 11th.—4 P.M., Mr. George Waugh: Some Problems of Appendicitis in Childhood.

NATIONAL HOSPITAL, Queen-square, W.C.

Monday, March 9th.—12 noon, Dr. Greenfield: Pathology of Cerebral Tumours. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Disturbances of Sensation (Objective).

Tuesday.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Armour: The Relief of Pain by Surgical Measures.

Wednesday.—2 P.M., Dr. Martin: Out-Patient Clinic.

Thursday.—2 P.M., Dr. Kinnier Wilson: Out-Patient Clinic. 3.30 P.M., Dr. Riddoch: Common Lesions of Peripheral Nerves.

Friday.—2 P.M., Dr. Adie: Out-Patient Clinic. 3.30 P.M., Sir Percy Sargent: Pituitary Tumours.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Public Health Division), Keppel-street, Gower-street, W.C.

Monday, March 9th.—2 P.M., Mr. T. Dunlop Young: Meat Inspection. 5 P.M., Mr. J. C. Dawes: Public Abattoirs: Layout, General Arrangement, &c.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

Tuesday, March 10th.—5 P.M., Dr. J. E. M. Wigley: Pemphigus and Allied Eruptions.

Thursday.—5 P.M., Dr. W. K. Sibley: Electro-Therapeutics.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

Wednesday, March 11th.—4 P.M., Dr. S. Wyard: Recent Advances in the Treatment of Cancer.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

Thursday, March 12th.—5 P.M., Dr. H. Burt-White: Abortion: Diagnosis and Treatment.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

Friday, March 13th.—4 P.M., Mr. Gill-Carey: Diagnosis of Sinusitis.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

Tuesday, March 10th.—3.15 P.M. (at the Royal Chest Hospital), Dr. P. Kerley: Radiography of Chest.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

Thursday, March 12th.—5.15 P.M. (at 11, Chandos-street Cavendish-square, W.), Dr. J. Burnett Rae: The Psychology of Sanity.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

Tuesday, March 10th.—4.15 P.M., Dr. Crighton Bramwell Heart Disease Complicating Pregnancy.

Friday.—4.15 P.M., Dr. F. E. Tylecote: Demonstration of Medical Cases.

ANCOATS HOSPITAL, Manchester.

Thursday, March 12th.—11 A.M., Dr. G. J. Langley Clinical Demonstration. 4.15 P.M., Mr. H. Platt Treatment of Fractures of the Upper Limb.

ST. MARY'S HOSPITALS, Manchester.

Friday, March 13th.—4.15 P.M. (at the Whitworth-street West Hospital), Post-graduate Lecture by Dr. Dougal and Dr. Addis: Antenatal Demonstrations.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, Elizabeth-street.

Wednesday, March 11th.—4.30 P.M., Mr. R. R. Kerr: The Acute Abdomen.

Vacancies

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-Urinary Diseases, 91, Finchley-road.—H.S. £150.

Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.

Birmingham, Ear and Throat Hospital, Edmund-street.—H.S. At rate of £150.

Birmingham, Selly Oak Hospital.—Radiographer. £250.

Brighton, Hove and Preston Dispensary and Hove Hospital.—Hon. Surgeon to Hove Hospital.

Cambridge, Addenbrooke's Hospital.—H.S. to Special Depts. H.S. Also Res. Anæsthetist and Emergency Officer. All at rate of £130.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Chesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £100-£175.

Coventry and Warwickshire Hospital.—Res. H.S. £125.

Derby, Derbyshire Hospital for Women.—H.S. At rate of £150.

Dorchester, Dorset Mental Hospital, Herrison.—Jun. Asst. M.O. £400.

Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.

East Ham Memorial Hospital, Shrewsbury-road, E.—H.S. and Cas. O. At rate of £120. H.P. At rate of £150. Also Hon. Ophthal. Surgeon.

Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.

Guy's Hospital Dental School, S.E.—Dental Travelling Scholarship. £150.

Harrow Hospital, Harrow-on-the-Hill, Middlesex.—Res. M.O. At rate of 140 guineas.

Hendon U.D.C.—Dentist. £550.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—H.P. At rate of £150.

Hostel of St. Luke, 14, Fitzroy-square, W.—Res. M.O. At rate of £200.

Hull Royal Infirmary.—H.S. to Ophth, Ear, Nose, and Throat Dept. At rate of £150. Also Hon. Phys.

Ipswich, East Suffolk and Ipswich Hospital.—Two H.S.'s Each at rate of £120.

King's Lynn, West Norfolk and King's Lynn Hospital.—Sen. H.S. and Jun. H.S. At rate of £175 and £125 respectively.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.

Liverpool Seamen's Dispensary.—Part-Time Asst. V.D. M.O. £250.

Liverpool, Stanley Hospital.—H.P., Two H.S.'s, and House Gynæcological Surg. Each £100.

Liverpool, Walton Hospital.—Res. Asst. M.O.'s. £100.

L.C.C. Mental Hospital Service.—Jun. Asst. M.O. £500.

L.C.C.—Part-time Assistant Aurist for P.H. Dept. 34*s.* 6*d.* per session.

London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.

London Hospital, E.—Asst. Obstet. and Gyn. Surgeon.

Manchester, Ancoats Hospital.—Res. M.O. At rate of £150. Also Two H.S.'s. Each at rate of £100.

Manchester and District Radium Institute, Nelson-street.—Director for Radium Institute.

Manchester, Monsall Hospital for Infectious Diseases.—Jun. M.O. At rate of £350.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Manchester, St. Mary's Hospitals.—Jun. Asst. M.O. for Children's Out-patient Dept. At rate of £50.

Manchester, Withington Hospital.—Asst. M.O. At rate of £350.

Middlesex Hospital, Mortimer-street, W.—Anæsthetist for Dental Dept. 10s. 6d. per session.

Miller General Hospital, Greenwich-road, S.E.—Cas. O. At rate of £150. H.P. and H.S. Each at rate of £125. Also Anæsthetist. 52 gns.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and Sen. H.S. Also Jun. H.P. and Jun. H.S., and Two Cas. O.'s All at rate of £100.

Newark General Hospital.—Res. H.S. £175.

Newcastle-upon-Tyne, Newcastle General Hospital.—H.P. and H.S. Each at rate of £100.

Newport, Monmouthshire County Council.—Asst. M.O. £500.

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.

Portsmouth City Mental Hospital.—Jun. Asst. M.O. £350.

Portsmouth Royal Hospital.—Second H.S. Also Cas. O. At rate of £130 and £100 respectively.

Preston County Borough.—Asst. School M.O. £600.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington, W.—H.P. At rate of £100.

Richmond, Surrey, Royal Hospital.—Jun. J.S. At rate of £100.

Royal Free Hospital, Gray's Inn-road, W.C.—First Asst. for Children's Department. £100.

Royal National Orthopædic Hospital, 234, Great Portland-street, W. H.S. At rate of £150. Also H.S. for Country Branch, Brockley Hill, Stanmore. At rate of £150.

Royal Northern Hospital, Holloway, N.—H.P. At rate of £70.

St. Alfege's Hospital, 48, Vanbrugh-hill, Greenwich, S.E.—Asst. M.O. £350.

St. Bartholomew's Hospital, E.C.—Asst. Surgeon.

St. John's Hospital, Lewisham, S.E.—Hon. Physician.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—H.S. At rate of £75.

Salford Royal Hospital.—Three H.S.'s to Special Departments. Also Cas. H.S. All at rate of £125.

Salisbury, General Infirmary.—Asst. M.O. to Venereal Diseases Department.

Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £126.

Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Res. Anæsthetist. £80–£100.

Society of Apothecaries of London, Water-lane, Queen Victoria-street, E.C.—Four Examinerships.

South London Hospital for Women, South-side, Clapham Common, S.W.—H.P. and First H.S. Each at rate of £100.

Stalybridge, Borough of.—M.O.H., &c. £800.

Taunton, Taunton and Somerset Hospital.—H.P. £100.

Wallasey Victoria Central Hospital.—Jun. H.S. At rate of £100.

Walsall General Hospital.—H.S. At rate of £150.

Watford, Herts, Peace Memorial Hospital.—Res. M.O. At rate of £150.

West Bromwich, Hallam Hospital.—Res. H.P., and Res. H.S. Each £250.

West Bromwich and District General Hospital.—Cas. H.S. At rate of £200.

West Ham County Borough, Education Committee.—Chief Asst. School M.O. £750. Also Asst. School M.O. £500.

West London Hospital, Hammersmith-road, W.—H.P., Two H.S.'s. and One Res. Anæsthetist. All at rate of £100.

Westminster Hospital, Broad Sanctuary, S.W.—Asst. H.P. At rate of £52.

Willesden General Hospital, N.W.—Hon. Clin. Asst. for Med. Out-patient Dept. Also H.P. £100.

Windsor, King Edward VII. Hospital.—H.S. At rate of £100.

Wolverhampton, Royal Hospital.—H.S. for Ear, Throat, and Nose Dept. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Woking (Surrey), and Clynderwen (Pembroke).

Appointments

Dunscombe, Clement, M.B., B.Chir. Camb., D.P.H., has been appointed Medical Officer of Health and School Medical Officer for the County Borough of Canterbury.

Hayes, Edmund, D. T., M.D. Dub., D.P.M., Hon. Assistant Physician to the Northampton General Hospital, to take charge of the Department of Psychological Medicine.

Roderick, R., L.R.C.P. Lond., M.R.C.S. Eng., Assistant School Medical Officer for Newport.

Urquhart, W. S., M.B., Ch.B. Edin., D.T.M., Senior Assistant School Medical Officer for Middlesbrough.

Certifying Surgeons under the Factory and Workshop Acts: Smith, S. L., M.B., Ch.B. Edin. (Tewkesbury); and Whiting, J. S., L.R.C.P. Lond., M.R.C.S. (Sudbury, Suffolk). Ayrey, F., M.B., Ch.B. Edin. (Langport); Booth, G. H. H., M.B., Ch.B. Manch. (Knighton, Radnor); Hagenbach, C. E., L.M.S.S.A. Lond. (Breage, Cornwall); Jackson, H. H., L.M.S.S.A. Lond. (Parbold, Lancaster); and Nicholson, J. A., M.B., Ch.B. Aberd. (Great Haseley, Oxford).

Births, Marriages, and Deaths

BIRTHS.

Blair.—On Feb. 28th, at Mortlake-road, Kew Gardens, Surrey, the wife of Prof. D. M. Blair, of a daughter.

Findlay.—On Feb. 26th, at Blenheim-terrace, N.W., the wife of Dr. G. M. Findlay, of a daughter.

Pritchard.—On Feb. 25th, at St. Andrew's-street, Cambridge, the wife of Stephen Pritchard, M.R.C.S., of a son.

Sammons.—On Feb. 24th, at Kingswood, Bristol, the wife of Dr. R. A. Sammons, of a daughter.

Shaw.—On Feb. 23rd, at Heathcote, East Grinstead, the wife of Dr. H. B. Shaw, of a son.

DEATHS.

de Silva.—On Feb. 23rd, in London, Wilton Lionel de Silva, M.D., M.R.C.S., L.R.C.P., B.Ch., of Colombo, Ceylon.

Drew.—On Feb. 25th, at Thalassa, Cooden, Sussex, Douglas Drew, M.D., F.R.C.S., formerly of Wimpole-street.

Hora.—On Feb. 25th, at his residence, Cambridge-road, Cambridge Heath, N.E., Dr. Julian Hora.

Lennox.—On Feb. 26th, at Alexandra-place, St. Andrews. David Lennox, M.D., aged 72 years.

Paterson.—On Feb. 23rd, at Albany House, South Farnborough, Hants, Charles Edward Paterson, M.D., aged 73.

Rowland.—On Feb. 11th, 1931, at Georgetown, British Guiana, Edith Ellen Stratford, wife of Ernest Daniel Rowland, M.B., C.M., I.S.O., J.P., of the British Guiana Medical Service.

Smith.—On Feb. 22nd, at Pentwyn, Pentyrch, Glam, Stanley Alwyn Smith, D.S.O., O.B.E., M.D., M.Ch., F.R.C.S.E., aged 47 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

THE LANCET: SUBSCRIPTION RATES.

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	Three Months	0	12	6

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NOTES, COMMENTS, AND ABSTRACTS

THE TREND OF MEDICAL PRACTICE.

AT a meeting of the London Jewish Hospital Medical Society on Feb. 12th Mr. Somerville Hastings, M.P., delivered an address on this subject in which he pointed out the tendency in modern medicine to take many branches of medical practice out of the hands of the general practitioner and concentrate them in some form of State organisation, while the exigencies of research were demanding further centralisation of material. This process was bound to continue, partly because it undoubtedly tended to greater efficiency and had very largely contributed to the great improvement in the general standard of physical well-being; and partly because the spirit of the age demanded collective action in the provision of its needs. It was being recognised that the team and not the individual was the true unit in medical practice, a principle which was exemplified in the work of the modern general hospital. The general practitioner should act as a liaison officer, maintaining contact with his patient throughout his treatment and coördinating the work of the team. He should have his definite place in the hospital system; and, in fact, an ideal scheme demanded the institution of district clinics as the places of first resort, rather than the private surgery or the out-patients' department of a hospital. The inability of the voluntary hospitals to provide the necessary accommodation would throw more and more work upon the new county hospitals, which must eventually rival the voluntary hospitals in the quality of their work, by reason both of greater financial backing and greater resources of material for practice, teaching, and research. The speaker advocated the inclusion of dependents in the insurance scheme, but would extend it to all classes, irrespective of income, and make it non-contributory, providing a free national service complete with specialist services, and thus opening all the resources of medicine equally to all. The cost would be borne by State funds, so that the burden would be distributed in accordance with the age-long principle of medical practice—namely, from each according to his means. Mr. Hastings thought that the increasing demand amongst the public for a form of State medical service must inevitably result in the introduction of some such system; and it behoved the medical profession to anticipate this, and ensure the creation of a fair and efficient scheme by close and sympathetic attention to the problem.

PREVENTION OF SILICOSIS.

IN a Chadwick public lecture delivered at the Royal Sanitary Institute on Feb. 24th Mr. A. E. Elsby said that in no industry, manufacturing or using finely divided silica, is the atmosphere completely free from silica dust, and maintained that the weakness of all legislation concerning dust collection lies in the fact that no limiting concentration of silica dust in the atmosphere has been specified. He discussed, in some detail, the results of A. E. Russell and co-workers (U.S. Public Health Bulletin No. 187) which have led to a permissible dust standard of 10 million particles of granite dust per cubic foot of air being proposed. As this dust contains 30–40 per cent. silica in the form of quartz, the limiting concentration calculated in terms of 100 per cent. silica, of particle size less than 10 microms and correctly estimated, would be 3 million particles per cubic foot of air; a figure which can be obtained in industry if correctly designed plant is installed and maintained. The determination of the amount of silica dust in the atmosphere, said the lecturer, is a matter of some difficulty, and he recommended the impinger method described in U.S. Public Health Bulletin No. 144 in preference to Dr. Owens's dust counter, because of the advantages of chemical analysis of the dust collected, of more accurate dust counting, and greater efficiency at high concentrations.

In Mr. Elsby's opinion, failure of dust-collection systems is generally due to the installation of unsuitable collectors. The cyclone collector is appropriate in cases where 60–70 per cent. collection is sufficient and the very fine dust can be vented to the atmosphere. This is very rarely possible, owing to nuisance, and in general, complete collection is necessary. The most satisfactory type of collector under all conditions is the bag filter or cloth screen in which the filter is mechanically shaken and subjected to periodical reversed air-blast. A collector of this type can deal with air containing grs. 15 of silica per cubic foot, allowing 1 foot of filtering area per 3 cubic feet of air per minute.

The lecture concluded with the suggestion that the plant manufacturer who guaranteed his system to bring the dust concentration down to the limiting figure previously mentioned would be doing much to reduce the incidence of silicosis.

NEW PREPARATIONS.

T.C.P. BRONCHIAL ANTIDOTE.—The British Alkaloids, Ltd., Winchester House, London, E.C.2, have added to their T.C.P. (trichlorophenylmethyliodosalicyl) preparations a form particularly for the treatment of affections of the respiratory organs. The disinfectant, T.C.P., was noticed in THE LANCET recently (Jan. 11th, 1930, page 114), and it is claimed for the new preparation, which is slightly alkaline, that a chemical reaction takes place on ingestion which results in the secretions of the bronchi being not only disinfected but liquefied, thus facilitating their expulsion. The preparation is put up in 2 oz. and 8 oz. bottles and the dose for adults is a tablespoonful to be taken night and morning in an equal quantity of water, the dose for children being much smaller and regulated according to the age of the child. The preparation should be taken in accordance with medical advice.

INTERNATIONAL FELLOWSHIPS FOR RESEARCH.

THE International Federation of University Women has published a handbook on international fellowships[1] which supplies in a concise tabular form the information needed by graduates and research workers who would like to pursue their work abroad. The list is divided into two parts, dealing with fellowships available for graduates of particular countries, and with those available for all students. A surprising amount of help is to be had in this way; over 210 pages are occupied in setting out in the shortest possible form the subject of each fellowship, where it is tenable, its duration, value, and conditions, and the place where application should be made. Graduates of the universities of Great Britain alone will find 27 pages devoted to fellowships available for them in other countries.

There is little doubt of the value of these fellowships. As the preface to the pamphlet points out, there are two critical periods in a research worker's career: the first is in the early days, when he needs to spend some years under an experienced colleague before he can apply for a post which will enable him to do investigation and at the same time provide an adequate salary. The second stage is an interim period when he is qualified for a good appointment but a teaching post does not happen to be vacant; the need to earn his living may deflect him into commerce or industry at this point. For certain kinds of work, moreover, an appointment abroad is not merely a luxury but a necessity. Books, manuscripts, flora, and fauna of particular kinds are only available at particular places, and there are only three laboratories in the world where experiments

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[1] Pamphlet No. 4. Crosby Hall, Cheyne Walk, London, S.W.3. 1930. 1s.

Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.

Guy's Hospital Dental School, S.E.—Dental Travelling Scholarship. £150.

Harrow Hospital, Harrow-on-the-Hill, Middlesex.—Res. M.O. At rate of 140 guineas.

Hendon U.D.C.—Dentist. £550.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—H.P. At rate of £150.

Hostel of St. Luke, 14, Fitzroy-square, W.—Res. M.O. At rate of £200.

Hull Royal Infirmary.—H.S. to Ophth. Ear, Nose, and Throat Dept. At rate of £150. Also Hon. Phys.

Ipswich, East Suffolk and Ipswich Hospital.—Two H.S.'s Each at rate of £120.

King's Lynn, West Norfolk and King's Lynn Hospital.—Sen. H.S. and Jun. H.S. At rate of £175 and £125 respectively.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.

Liverpool Seamen's Dispensary.—Part-Time Asst. V.D. M.O. £250.

Liverpool, Stanley Hospital.—H.P., Two H.S.'s, and House Gynæcological Surg. Each £100.

Liverpool, Walton Hospital.—Res. Asst. M.O.'s. £100.

L.C.C. Mental Hospital Service.—Jun. Asst. M.O. £500.

L.C.C.—Part-time Assistant Aurist for P.H. Dept. 31*s.* 6*d.* per session.

London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.

London Hospital, E.—Asst. Obstet. and Gyn. Surgeon.

Manchester, Ancoats Hospital.—Res. M.O. At rate of £150. Also Two H.S.'s. Each at rate of £100.

Manchester and District Radium Institute, Nelson-street.—Director for Radium Institute.

Manchester, Monsall Hospital for Infectious Diseases.—Jun. M.O. At rate of £350.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Manchester, St. Mary's Hospitals.—Jun. Asst. M.O. for Children's Out-patient Dept. At rate of £50.

Manchester, Withington Hospital.—Asst. M.O. At rate of £350.

Middlesex Hospital, Mortimer-street, W.—Anæsthetist for Dental Dept. 10s. 6d. per session.

Miller General Hospital, Greenwich-road, S.E.—Cas. O. At rate of £150. H.P. and H.S. Each at rate of £125. Also Anæsthetist. 52 gns.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and Sen. H.S. Also Jun. H.P. and Jun. H.S., and Two Cas. O.'s All at rate of £100.

Newark General Hospital.—Res. H.S. £175.

Newcastle-upon-Tyne, Newcastle General Hospital.—H.P. and H.S. Each at rate of £100.

Newport, Monmouthshire County Council.—Asst. M.O. £500.

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.

Portsmouth City Mental Hospital.—Jun. Asst. M.O. £350.

Portsmouth Royal Hospital.—Second H.S. Also Cas. O. At rate of £130 and £100 respectively.

Preston County Borough.—Asst. School M.O. £600.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington, W.—H.P. At rate of £100.

Richmond, Surrey, Royal Hospital.—Jun. J.S. At rate of £100.

Royal Free Hospital, Gray's Inn-road, W.C.—First Asst. for Children's Department. £100.

Royal National Orthopædic Hospital, 234, Great Portland-street, W. H.S. At rate of £150. Also H.S. for Country Branch, Brockley Hill, Stanmore. At rate of £150.

Royal Northern Hospital, Holloway, N.—H.P. At rate of £70.

St. Alfege's Hospital, 48, Vanbrugh-hill, Greenwich, S.E.—Asst. M.O. £350.

St. Bartholomew's Hospital. E.C.—Asst. Surgeon.

St. John's Hospital, Lewisham, S.E.—Hon. Physician.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—H.S. At rate of £75.

Salford Royal Hospital.—Three H.S.'s to Special Departments. Also Cas. H.S. All at rate of £125.

Salisbury, General Infirmary.—Asst. M.O. to Venereal Diseases Department.

Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £126.

Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Res. Anæsthetist. £80–£100.

Society of Apothecaries of London, Water-lane, Queen Victoria-street, E.C.—Four Examinerships.

South London Hospital for Women, South-side, Clapham Common, S.W.—H.P. and First H.S. Each at rate of £100.

Stalybridge, Borough of.—M.O.H., &c. £800.

Taunton, Taunton and Somerset Hospital.—H.P. £100.

Wallasey Victoria Central Hospital.—Jun. H.S. At rate of £100.

Walsall General Hospital.—H.S. At rate of £150.

Watford, Herts, Peace Memorial Hospital.—Res. M.O. At rate of £150.

West Bromwich, Hallam Hospital.—Res. H.P., and Res. H.S. Each £250.

West Bromwich and District General Hospital.—Cas. H.S. At rate of £200.

West Ham County Borough, Education Committee.—Chief Ast School M.O. £750. Also Asst. School M.O. £500.

West London Hospital, Hammersmith-road, W.—H.P., Tw H.S.'s. and One Res. Anæsthetist. All at rate of £100

Westminster Hospital, Broad Sanctuary, S.W.—Asst. H.P. A rate of £52.

Willesden General Hospital, N.W.—Hon. Clin. Asst. for Med Out-patient Dept. Also H.P. £100.

Windsor, King Edward VII. Hospital.—H.S. At rate of £10

Wolverhampton, Royal Hospital.—H.S. for Ear, Throat, and No Dept. At rate of £100.

The Chief Inspector of Factories announces vacant appointmen for Certifying Factory Surgeons at Woking (Surrey), an Clynderwen (Pembroke).

Appointments

DUNSCOMBE, CLEMENT, M.B., B.Chir. Camb., D.P.H., has be appointed Medical Officer of Health and School Medic Officer for the County Borough of Canterbury.

HAYES, EDMUND, D. T., M.D. Dub., D.P.M., Hon. Assista Physician to the Northampton General Hospital, to ta charge of the Department of Psychological Medicine.

RODERICK, R., L.R.C.P. Lond., M.R.C.S. Eng., Assistant Scho Medical Officer for Newport.

URQUHART, W. S., M.B., Ch.B. Edin., D.T.M., Senior Assista School Medical Officer for Middlesbrough.

Certifying Surgeons under the Factory and Workshop Act SMITH, S. L., M.B., Ch.B. Edin. (Tewkesbury); a WHITING, J. S., L.R.C.P. Lond., M.R.C.S. (Sudbu Suffolk). AYREY, F., M.B., Ch.B. Edin. (Langport); Boo G. H. H., M.B., Ch.B. Manch. (Knighton, Radnor); HACK BACH, C. E., L.M.S.S.A. Lond. (Breage, Cornwall); JACKS H. H., L.M.S.S.A. Lond. (Parbold, Lancaster); a NICHOLSON, J. A., M.B., Ch.B. Aberd. (Great Hasel Oxford).

Births, Marriages, and Deaths

BIRTHS.

BLAIR.—On Feb. 28th, at Mortlake-road, Kew Gardens, Surr the wife of *Prof. D. M. Blair*, of a daughter.

FINDLAY.—On Feb. 26th, at Blenheim-terrace, N.W., the w of Dr. G. M. Findlay, of a daughter.

PRITCHARD.—On Feb. 25th, at St. Andrew's-street, Cambrid the wife of Stephen Pritchard, M.R.C.S., *of a son.*

SAMMONS.—On Feb. 24th, at Kingswood, Bristol, the wife Dr. R. A. Sammons, of a daughter.

SHAW.—On Feb. 23rd, at Heathcote, East Grinstead, the w of Dr. H. B. Shaw, of a son.

DEATHS.

DE SILVA.—On Feb. 23rd, in London, Wilton Lionel de Si M.D., M.R.C.S., L.R.C.P., B.Ch., of Colombo, Ceylon.

DREW.—On Feb. 25th, at Thalassa, Cooden, Sussex, Doug Drew, M.D., F.R.C.S., formerly of Wimpole-street.

HORA.—On Feb. 25th, at his residence, Cambridge-roa Cambridge Heath, N.E., Dr. Julian Hora.

LENNOX.—On Feb. 26th, at Alexandra-place, St. Andre David Lennox, M.D., aged 72 years.

PATERSON.—On Feb. 23rd, at Albany House, South Far borough, Hants, Charles Edward Paterson, M.D., aged

ROWLAND.—On Feb. 11th, 1931, at Georgetown, British Guian Edith Ellen Stratford, wife of Ernest Daniel Rowlan M.B., C.M., I.S.O., J.P., of the British Guiana Medic Service.

SMITH.—On Feb. 22nd, at Pentwyn, Pentyrch, Glam, Stank Alwyn Smith, D.S.O., O.B.E., M.D., M.Ch., F.R.C.S.E aged 47 years.

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ADDRESSES AND ORIGINAL ARTICLES

TRIGEMINAL NEURALGIA AND ITS TREATMENT.*

BY WILFRED HARRIS, M.D. CAMB., F.R.C.P. LOND.,
SENIOR PHYSICIAN TO ST. MARY'S HOSPITAL AND TO THE HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE.

ALTHOUGH pain of various kinds in the face is one of the commonest ailments which we are called upon to treat, there is one form of facial neuralgia which overshadows all others in the severity of the agony produced, and also in its inveterate persistency. This disease, known as trigeminal neuralgia, or tic douloureux, has been known for hundreds of years. Probably well known to the Arabian physician, Avicenna, it was doubtless often met with in England as early as the thirteenth century, for Bishop Button's tomb in Wells Cathedral became the object of veneration, as the patron Saint for sufferers from facial neuralgia, of large numbers of pilgrims, whose gifts enriched the foundation, and in whose memory were carved those curious figures on the capitals of the columns near the tomb of the saint. Some of them, such as the well-known "Toothache" figure, or that of the monk with open mouth and semi-protruded twisted tongue, are perfect examples of sufferers in torture with neuralgic spasms. Indeed, though no written record of the Bishop's interest in the disease remains, it might perhaps as well be called "Button's disease" as to be named after Dr. Fothergill, who first described it properly in this country in 1783. In the course of a long and busy practice he observed 14 cases of this type of neuralgia, which from its persistence and inveterate recurrence he ascribed to cancer, a view which we now know to be mistaken.

One hundred years before his time the notorious Judge Jeffries was said to have suffered from it, which, if a fact, may perhaps be held as a slight excuse for his violent treatment of many of the prisoners brought before him. Another famous sufferer from this complaint was Lord Lawrence, of the Indian Mutiny. In his case a curious effect of emotion on the disease was the sudden cessation of the neuralgic spasms on his learning of the outbreak of the Mutiny, though the disease recurred later after the trouble was over. Cessation of the neuralgia entirely for months at a time, or even for years, is a common feature, especially in the earlier years of the complaint, the intervals of freedom gradually becoming shorter. Usually commencing after middle life, it occasionally begins even in the early twenties, or 'teens, the youngest age I have met with personally being 12 in two cases. One of them was a lady aged 65, who had suffered with the neuralgia for 53 years, never having been able to venture outside her house for the last 20 years, until she was cured by alcohol injection.

Ætiology.

Changes of weather have no particular effect on the pain, except that cold winds are apt to aggravate the spasms. Hot summer is no more beneficial than the cold of winter, and it is useless to send patients away to Madeira, Egypt, or similar warm climates in the vain hope of thus alleviating their distress. Emotion I have referred to as having arrested the pain. More often a sudden violent emotion, such as a piece of bad news or a painful parting, may precipitate the first onset of the neuralgic spasms. I have known it start within three-quarters of an hour in a woman whose child was run over and killed by a motor. Another lady who was much upset by the news of the sinking of the *Lusitania*, commenced to suffer within a day or two of the event. Again, another first felt the pain on the day after the shock of finding her husband lying dead. Similarly, prolonged worry and mental strain may have a similar effect. Once started, however, though the severity of the attacks may diminish or even cease for a time, recurrence is inevitable in true tic douloureux.

EXCITING CAUSES.

Many different exciting causes may start the disease, in addition to cold wind or violent emotion. A blow on the jaw or face has many times preceded the initial spasm, in one of my cases only one and a half hours previously. A severe dental extraction is another initial cause in some cases, and an antral abscess in others. In the large majority, however, no definite exciting cause can be traced, the neuralgia either starting suddenly and violently in the upper or lower jaw on one side, and recurring at various intervals, or in other cases commencing as a slight twinge which may be mistaken for toothache. In others, intensely sensitive spots such as the lower side of the nose or upper lip may develop, the slightest touch on these causing a paroxysm of pain. These are known as "trigger" zones. Rarely does this type of neuralgia commence in the supraorbital area, the very large majority affecting either the upper or the lower jaw on one side. In the few cases in which the spasmodic pain shoots up the forehead to the top of the head the pain is never limited to the first or ophthalmic division of the nerve, invariably ultimately spreading into the cheek and side of the nose to the upper lip, indicating the involvement of the second division.

It is especially the middle and lower divisions of the fifth nerve that are liable to this severe neuralgia, and this gives a clue to the original causation of the disease. No other nerve, with the rare and solitary exception of the glossopharyngeal, is subject to this type of neuralgia, that is to say, it is the two sensory nerves serving the buccal cavity that are subject to tic douloureux. These two nerves, supplying the buccal cavity, are subject in the majority of people to constantly recurring sepsis in their terminal branches in the gums, teeth, and tonsils, to a degree that no other nerves in the body are exposed, and it can scarcely be doubted that chronic septic neuritis of the terminal nerve filaments of these two cranial nerves is the primary cause of their becoming foci of neuralgic spasms. Further evidence in the case of the fifth nerve at least is afforded by the absence of any pathological changes in the nerve trunks or Gasserian ganglion, and the absence of any anæsthesia or trophic changes in the territory of the affected nerve. Even more conclusive is the fact that division of the nerve trunk, or nerve blocking by injection of the nerve trunk with alcohol, arrests the neuralgic spasms at once, until regeneration of the nerve takes place, a process which on the average takes perhaps two years. If a longer period of immunity from pain must be secured, as, for example, in a patient who is unable to return for treatment owing to living in a distant part of the world, then the Gasserian ganglion itself must either be injected with alcohol, so as to produce permanent anæsthesia of the second and third divisions, and perhaps of the *ophthalmic division also*, or else the open Gasserian operation must be undertaken for section of the posterior root behind the ganglion.

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* An address given before the South-Western London Medical Society on March 11th, 1931.

DISTRIBUTION.

Commoner in women than in men, in the proportion roughly of three to two, the average age of commencement of trigeminal neuralgia is about the age of 50, though I have known it commence as early as 12 in two cases, and as late as 87. The upper and lower jaws are affected more or less equally, though the disease is commoner on the right side. The first or ophthalmic division is probably never affected alone, without the second division also becoming involved, though I have seen typical tic limited to the first division for three and a half years before the neuralgia spread to the side of the nose and upper lip.

One characteristic of this type of neuralgia is its limitation to the anatomical area of the nerve-supply, never crossing the middle line, or spreading to the back of the head. It is true that very occasionally the pain may be bilateral, that is to say, that true tic douloureux may affect both sides of the face. This occurs in about 4 per cent. of all cases, and usually the pain is much more severe on one side than on the other. The treatment will be the same as for unilateral cases, except that the open Gasserian operation must not be done on both sides, unless the surgeon can guarantee to spare the motor root, owing to the serious danger of jaw-drop from bilateral palsy of the biting muscles. Although jaw-drop will occur after bilateral injection of the ganglion, if the two injections are done within a few weeks of each other, yet the weakness passes off after about three months, as the motor root fibres regenerate, their trophic centre being within the pons, whereas the sensory fibres have their trophic centre in the nerve cells of the ganglion, and therefore when these are destroyed, the anæsthesia is permanent.

CLINICAL ASSOCIATIONS.

Genuine trigeminal neuralgia is met with occasionally complicating cases of *disseminated sclerosis*. These occur sufficiently often to exclude coincidence as the explanation, as I have met with no less than 35 instances of this association. This is to be distinguished from the trigeminal neuritis which is occasionally met with in the early history of some disseminated cases, in which transitory numbness of the face on one side, with anæsthesia, persists for two or three months, usually disappearing entirely; these cases complain of little or no pain. On the other hand, there is never any trace of anæsthesia on the face in the neuralgic cases of disseminated sclerosis, and these react to injection treatment of the neuralgia precisely the same as in the ordinary cases. A larger proportion of these cases suffer from bilateral neuralgia than in those which are unassociated with disseminated sclerosis, which perhaps might be expected if a factor in the development of the neuralgia is the proximity of plaques of sclerosis to the spinal roots of the fifth nerves in the pons and medulla.

Clonic facial spasm is another curious association in a small percentage of cases of this type of neuralgia. The number is too large to be explained by coincidence, and, moreover, the clonic facial spasm is always on the same side as the neuralgia. I can find no further association between the two conditions, and arrest of the neuralgia by alcohol injection of the affected fifth nerve trunk has no effect on the facial spasm, which persists unaltered, unless the facial nerve is also injected behind the ramus of the mandible or at the stylo-mastoid foramen. Of course, it is necessary to distinguish between the grimacing and screwing up of the face that commonly occurs during a painful paroxysm, and the clonic spasms of facial muscles, which are limited to one side, and are continued between the bouts of pain. Some years ago Cushing described severe facial neuralgia resembling tic douloureux associated with clonic facial spasm, in three patients who were not relieved of the pain by the Gasserian operation. I have never met with a similar case, nor have others been published, so far as I can ascertain.

Heredity of the actual neuralgia is met with in about 2 per cent. of the cases, and in two instances I have treated the parent for trigeminal neuralgia, and the child for disseminated sclerosis.

CHARACTER OF THE PAIN.

The type of pain in chronic paroxysmal trigeminal neuralgia may be described as flashing and shooting like electricity, often giving a sensation as of red-hot needles stabbing the face, or like knives sticking in. The initial onset of the pain may be extremely violent and sudden, and I have known a patient wake up in the night screaming in violent pain in her first attack. The paroxysms recur at various intervals, each lasting only half a minute or more, though in others the stabbing pains may continue almost without any cessation for as long as 20 minutes. Between the bouts of pain the patient may be quite free except for some slight hyperæsthesia of the face, and often some flushing and even slight swelling may be noticeable. Salivation is common during the attacks, in some sufferers the mouth being fixed open, and the tongue slightly protruding on one side. The attacks are often started by the movements of the jaw in eating or talking, or by handling the face when washing, so that when the neuralgic attacks are particularly frequent and severe, some patients will leave that side of the face untouched for days, or even weeks, and the taking of food may be so difficult that semi-starvation may result, with considerable weakness. After a period of some weeks with frequently recurring painful paroxysms, if no drastic treatment is undertaken by injection or operation, the neuralgic attacks may subside gradually, or even disappear entirely for months, or in some cases for years before the trouble recurs. Usually the periods of remission become shorter as the years pass, until the sufferer is rarely free entirely for more than a few hours or perhaps days. In some cases, even from the commencement, the pain recurs frequently every day, meal times or handling the face in any way being especially productive of the neuralgic spasms.

Treatment.

The treatment of trigeminal neuralgia will depend on the severity of the pain and the duration of the disease, and to a certain extent on the age of the patient. In a few cases the severity of the pain seems to be comparatively slight, and does not interfere sufficiently with the normal life and work of the patient to justify any more drastic treatment than radiant heat, ionisation, and perhaps gelsemium and the milder drug analgesics administered internally. Morphia, heroin, and cocaine must be avoided entirely, as in this disease perhaps more than in any other the danger of a drug habit being induced is serious. It is difficult for a doctor or other onlooker to gauge the severity of an attack of neuralgia. Some patients will react excessively, throwing themselves about or screaming, while another may show little more than slight twitching of the facial muscles, with inability to speak for a few moments. Yet the slight signs exhibited in the second case may be due to the restraint of an iron will and pluck, though his (or her) suffering may be equal or even greater than in the other. When milder methods fail to relieve, or if the paroxysms are severe and frequent, then one of two methods must be chosen in order to make relief certain. Either the open Gasserian operation for resection of the sensory root within the cranium must be undertaken by a skilled surgeon, or else alcohol injection of the offending nerve trunk must be performed at either the foramen ovale or rotundum, as the case may be.

Injection is, I think, always to be preferred in the first instance in all cases, as in a considerable number the cure appears to be permanent, even without injection of the ganglion itself. When both upper and lower jaws are involved in the neuralgia, requiring injection of the second and third divisions separately, the immunity from pain rarely lasts more than two years, and I then prefer to attempt injection of the ganglion itself. In a large proportion of cases I have been able to do this successfully through the foramen ovale, and since my first ganglion injection in 1910 many scores of patients have thus obtained permanent relief. In younger subjects, under the age of 55, should recurrence of the neuralgia take place within one and a half years of the first injection, it is probably wise to inject the ganglion at once. If this proves feasible, the cure should be permanent, but if it is for any reason impossible to do this, then the open Gasserian operation should be advised, in order to avoid recurring injections every year or two, which almost certainly become more difficult on each occasion. In older persons over the age of 75 I do not think the open Gasserian operation is advisable.

TECHNIQUE OF INJECTION.

The technique necessary for these injections I have given in detail elsewhere.[1] With regard to the use of a general anæsthetic, further experience has decided me strongly in favour of morphine-hyoscine anæsthesia, as against the use of either chloroform or ether inhalation narcosis. With the latter, one is apt to feel a little hurried, and the use of the mask over the face and the position of the anæsthetist both interfere with the free manipulation of the needle that is required.

With morphine-hyoscine the greatest deliberation of movement is easy, and this is a valuable point, whereas vomiting never occurs during the operation, though this complication is common with an inhalation anæsthetic, when the patient is allowed to come round for testing purposes. If the proper amount of morphine-hyoscine is used, and sufficient time allowed for its action, its general anæsthetic action is ideal, so that no pain is felt, and the memory of the operation is afterwards often entirely obliterated, though at the time sufficient consciousness is preserved for fairly reliable answers to be given to tests for anæsthesia to pin-prick on the lips, chin, or cheek. These tests are a most valuable guide during the progress of the injection as proof of the correct placing of the needle, and also as to the amount of alcohol necessary to use, as complete anæsthesia of the nerve is to be aimed at.

It is not always necessary to use a general anæsthetic and some patients prefer to do without, and often bear the operation perfectly well under the use of local novocain only, without feeling much pain. Indeed, I have often heard the remark that the pain is much less than that of the neuralgic spasms which they are constantly suffering from. If, however, the patient is nervous, especially if a woman, then a preliminary morphine-hyoscine injection is advisable. Usually ¼ gr. morphine with 1/150 gr. hyoscine suffices, given three-quarters of an hour before commencing the injection. In a few cases a second dose will be required before the proper stage of relaxation and quiet is secured. With persons over the age of 65 I generally use only 1/8 gr. of morphia, as I find that older people more easily slip into a condition of complete unconsciousness, just as if chloroform or ether were used, and then they are totally unable to react to the pin-prick tests, and it becomes a matter of chance whether the nerve is injected properly.

Results.

In slight cases, medicinal treatment by gelsemium and the milder analgesics, with radiant heat or ionisation locally, and complete rest for a time, may give relief, but in severe neuralgic cases all such methods of treatment are altogether vain. Nothing then suffices except nerve blocking, either by alcohol injection or by resection of the nerve. Section of peripheral branches is doomed to failure, and the only open operation that should be undertaken is resection of the posterior sensory root. Alcohol injection of the peripheral foramina, the infraorbital or mental, is occasionally successful, but often fails to relieve for more than a few days. To make certain of success, the nerve trunks must be injected at their deep foramina of exit from the skull, or else the ganglion itself injected, a much more difficult and delicate proceeding.

During the last 23 years I have treated by injection over 1100 cases of trigeminal neuralgia, and with increasing experience I am convinced that one should never fail to inject the nerve at the foramen ovale or rotundum, and thus relieve the pain for at least a year, and often for much longer. Injections of the ganglion may produce light anæsthesia only, or total loss of all sensation. This will not vary after a few days have elapsed since the injection, and in large numbers of my cases I have no doubt the cure is permanent. Cases in which the neuralgia has returned after injection of a nerve trunk, especially if slight anæsthesia persists, are often more difficult to inject than a fresh case, and for this reason I advise injection of the ganglion when possible, if the neuralgia returns within 18 months of the first injection. If repeated injections in the region of the foramen ovale are performed, considerable fibrosis of the tissues in the zygomatic fossa results, with consequent greatly increased difficulty in manipulation of the needle, and ultimately it may even become necessary to resort to surgical operation to resect the posterior root within the cranium.

THE BIRMINGHAM WOMEN'S HOSPITAL.—The combined ordinary income of the Birmingham Women's Hospital and Maternity Hospital last year was £30.581, which fell short of the expenditure by £3695. There were 2505 in-patients at the Women's Hospital, an increase of 161, and the highest number yet reached. With the exception of 21, every one of these patients, who stayed on the average 15·2 days, received operative treatment; their cost per day was 10*s.* 7*d.* At the Maternity Hospital there were 1740 in-patients, a small increase. The rapid development of the work has necessitated the appointment of a resident medical officer.

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[1] Neuritis and Neuralgia. Oxf. Med. Pub. 1926.

SOME LESSONS OF THE DISTRIBUTION OF INFECTIOUS DISEASES IN THE ROYAL NAVY.*

BY SHELDON F. DUDLEY, O.B.E., M.D., M.R.C.P. LOND., D.P.H., D.T.M.,

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LECTURE II.

TEMPORAL AND GEOGRAPHICAL DISTRIBUTION OF RESPIRATORY INFECTION.

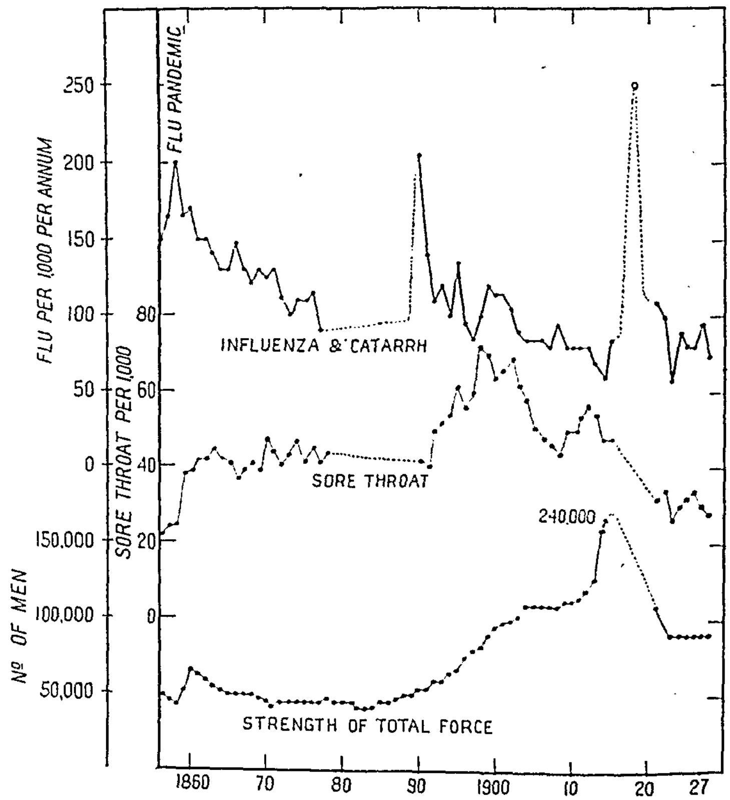
THE incidence of the minor respiratory infections in the Navy is represented in Fig. 5, the upper graph of which records the combined yearly rate for catarrh and influenza in the total naval forces. From 1856 until 1878 catarrh and influenza were entered under one heading, then for the next 12 years all respiratory diseases were entered together and these minor respiratory infections could not be abstracted from the statistical records. The influenza pandemic of 1890 resulted in influenza and catarrh again being separated from the "major" respiratory infections and each given an entry to itself. However, from personal knowledge and perusal of the reports, it is evident that in the Navy the terms catarrh and influenza are often used as synonyms for the same clinical condition, and for this reason they were added together all through the period the graph refers to. Sore-throat and tonsillitis, the "cynanche" of early years, has always been a ship disease, and is an excellent subject for statistical comparisons, because sore-throat practically diagnoses itself, and any conditions with which it might be confused are rare in the naval age-group. The middle graph in Fig. 5 refers to this group of infections.

Taking the top graph first it will be noticed that in the late 'fifties, when influenza was pandemic, the disease reached its maximum in the Navy in the year 1858. In 1890 there is a second peak which is not significantly higher than that of 1858. Complete records have not been issued for the war years, but a rough estimate from the data I have been able to collect suggests that in 1918 the combined morbidity of catarrh and influenza for the total force approached 25 per cent. It is also evident that the influenza of the 'fifties and 'sixties was a much more protracted visitation than that of the 'nineties and 1918. In fact, influenza was prevalent in epidemic form in different parts of the world from 1856 to 1870.

SORE-THROAT.

Turning now to the graph of sore-throat incidence, it will first be noticed that there is no parallelism between it and the graph for catarrh and influenza, which suggests these two groups of infection are caused by distinct kinds of biological agents. The morbidity from sore-throat was at a minimum from 1856–58; then, in 1859, it rose rapidly from about 2 to 4 per cent. per annum, where it remained with insignificant fluctuations until the year 1891. In 1892 the rate went up rapidly to reach a maximum of about 7 per cent. in 1898. In 1903 a rapid decline in the incidence of sore-throat commenced and continued till 1909, when a further rise took place before the record was temporarily terminated by the war. When the record is resumed in 1921 the incidence is found to have declined to about 3 per cent. These fluctuations in the prevalence of sore-throats were perplexing, until the strength of the total naval force was plotted out below the sore-throat graph. Each increase in the strength of the Navy means an accompanying acceleration in the rate of recruiting. The growth of the Navy in 1859 and 1860, and again from 1900–04, was in both instances accompanied by a rise in the incidence of sore-throat. Between 1904 and 1908 the rate of recruiting remained constant, and the morbidity from sore-throat declines, only to rise again when recruiting is re-accelerated. After the armistice demobilisation rapidly reduced the naval strength from over 200,00 to a routine complement of 90,000 men, and when accurate statistics were reissued in 1921 the incidence of "sore-throat" was found to have dropped accordingly.

FIG. 5.



Incidence of minor respiratory infections in the Total Force 1856–1927.

It may seem surprising that accelerations and retardations in the rate of recruiting showed little reflexion in the graph of the incidence of catarrh and influenza, because as shown in my first lecture (Fig. 3), the commoner infectious diseases, including catarrh, were, *during the same specific period*, greater in training establishments than in the Navy as a whole. The influence of the rate of recruiting doubtless is a factor of weight in the morbidity of catarrh and influenza, but the irregular incidence and periodicity and variable infectivity of this group mask any changes in the yearly incidence which might be caused by the recruiting factor. In fact, "sore-throat" is obviously less subject to sudden, large, and transitory changes in prevalence than epidemic influenza.

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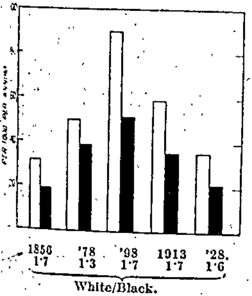
* The Milroy lectures delivered before the Royal College of Physicians of London on Feb. 26th, and March 3rd and 5th.

FIG. 6.

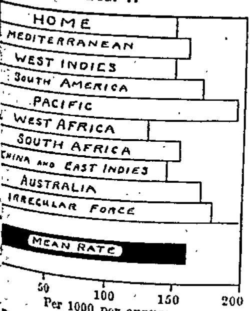


Sore-throats, ratio of morbidity at home (white columns) to morbidity abroad (black columns).

Fig. 6 compares the incidence of sore-throat at home and abroad during six years; those of minimum and maximum incidence, 1856 and 1898, 1878 and 1928, when the recruiting-rate was steady or retarded, and 1913, when the acceleration of the rate of recruiting was high. In each year the incidence on the Home Station was greater than abroad, because the home figures included those of the recruiting establishments. But in each year when the rate went up at home it also went up abroad. What is more, in the years illustrated, with the exception of 1878, the ratio of cases of sore-throat contracted at home to those contracted abroad remained practically constant.

Fig. 6 shows that the increments in the total sore-throat morbidity which accompanied an increase in recruiting cannot be solely attributed to an increase in the number of infections among the freshly added susceptible individuals, but that when a rise in incidence occurred in recruits a coincident rise in the morbidity of sore-throat occurred among trained men distributed throughout the world. It would appear that the influx of fresh susceptibles into the recruiting depôts in some way alters the complex of infecting organisms responsible for sore-throat. Hence, as carriers of new strains of bacteria from the recruiting depôts are drafted to ships all over the world, the sore-throat rate among trained men goes up on every station. The correlation of the rate of recruiting and the morbidity of sore-throat in the Navy presents an interesting analogy with the mortality of mice in experimental mouse-typhoid epidemics where an increase in the rate of recruiting in a mouse community was always followed by a rise in the death-rate among, not only of the newly added susceptible mice, but also the senior experienced mice already in the community.

FIG. 7.



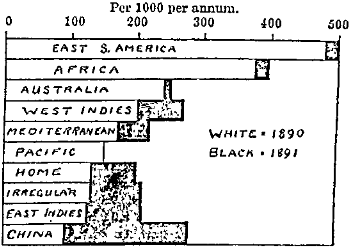
Average incidence of influenza and catarrh from 1857 to 1866 inclusive.

CATARRH AND INFLUENZA.

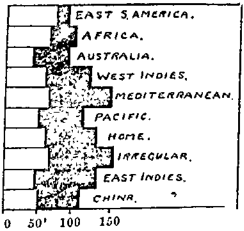
The distribution of catarrh and influenza in the 10 subdivisions of the Navy of the period is shown in Fig. 7 during 10 years of influenza prevalence from 1857–66, when these two clinical syndromes were entered under the same heading. This diagram, which represents the geographical distribution of some 70,000 cases, suggests that neither climate nor locality per se can have had much influence on the prevalence of this group of infections in the Navy. In contrast to sore-throat, the rate for catarrh and influenza on the Home Station during these years was below the mean rate for the total force.

FIG. 8.

(A).—*Influenza.*



(B).—*Catarrh.*



Influenza and catarrh in 1890 (white) and 1891 (black).

During and after the 1890 pandemic, influenza and catarrh were entered separately in the naval returns. The geographical distribution during 1890 and 1891 of influenza and catarrh as separate clinical entities is given in Fig. 8, where the incidence in 1891 is envisaged by the black parts of the columns. The epidemic of 1890 was practically confined to the first quarter of the year. In this connexion it should be noted that there is no definite mention of any epidemic of influenza in the preceding year, 1889. The influenza of 1891 was more evenly distributed throughout the year than that of 1890, but in 1891 the maximum incidence was in the autumn. In Fig. 8 the stations have been arranged from above downwards in the order of the influenza morbidity for 1890. The South American and African squadrons suffered most in 1890, the Home Station was seventh on the list. In the following year (1891) there was a tendency for the morbidity on the different naval stations to vary inversely with the previous year's attack-rate. The four stations least affected in 1890 were the four most heavily attacked in 1891, and China, with the minimum incidence in 1890, had an attack-rate in 1891 double that of any other station. This phenomenon is not due to the epidemic having lasted from December of one year into January of the next, and may be taken as suggesting that in 1890 outbreaks had some effect in increasing the influenzal herd-immunity for the following year an effect which was proportional to the attack-rate in 1890 (i.e., to the intensity of the antigenic stimulus previously received by the herd). In 1918 more direct evidence was available that one wave of influenza may confer an increment of herd-immunity to a following wave—anyhow on the victims of the previous waves. The attack-rate recorded in April and May in the Grand Fleet (90,000 in 1918) was 20 per cent. and 6 (± 0·04) per cent. in the autumn. Of 10,000 men who were attacked in the spring only 1·9 (± 0·13) per cent. suffered in the autumn, less than a third of the expected morbidity for the second wave. These observations testify that some strains of influenza confer an appreciable degree of herd-immunity which lasts over four months.

Below the influenza diagram in Fig. 8 is one made to the same scale for the geographical distribution of those infections which were described as catarrh in the naval health returns of 1890 and 1891. The stations are arranged in the same order as in the upper diagram. In 1890 there is no obvious correlation between the incidence of catarrh and influenza, but in 1891 the recorded catarrh cases in general were more prevalent than those infections which were labelled "influenza," and there is a tendency for those stations which had high rates for influenza in 1891 to also record high rates for catarrh. Actually, in 1891 the catarrh entries were more numerous than influenza entries. (In 1890, 14·6 per cent. of the Navy is recorded as having influenza and 5·7 per cent. catarrh. In 1891 there were 6·3 of the former infection to 7·0 per cent. of catarrh.)

The differential morbidity of these infections may be to some extent artificial, because although "cold in the head" is usually a synonym for catarrh and implies symptoms of coryza, and although, especially abroad, epidemic influenza is, more often than not, unaccompanied by coryza, and although, *stricto sensu* to my mind, catarrh and influenza are definite clinical entities and usually easily distinguishable, yet catarrh has in the Navy almost a local meaning which includes sporadic influenza. In the years following an influenza pandemic the cases in the returns recorded as catarrh tend to go up at the expense of influenza, because though many subjects entered as catarrh are undoubtedly recognised at the time to be genuine cases of influenza, there is a great tendency for medical officers as a matter of policy to call them catarrh because of the panic and fuss the report that influenza has reappeared in a ship tends to cause.

I think, therefore, the increase in the ratio of catarrh to influenza prevalence reported in 1891 is to some extent caused by this confusion of "naval catarrh" with "naval influenza," after the 1890 pandemic.

During 1890 and 1891 there were exact data for age-grouping those cases returned as influenza. These data are summarised in Table II. Ignoring for a moment the oldest group of men over 45 years of age, although the difference in attack-rates is not great, the numbers are large enough to be practically certain that in 1890 naval men under 25 years old were, on the average, more prone to attack than those over this age. Those who believe in the general application of the latent immunisation hypothesis would say the older men as a group had gained some immunity by their greater past bacterial experience; otherwise, the increase in herd-immunity with age which is shown in the 1890 statistics means that some men grow more immune to certain types of influenza as they get older, irrespective of their bacterial experience. In Table II. only the incidence for the total force is given, but a detailed examination showed that in only one of the ten divisions, into which the Navy of that time was divided, was the morbidity among men of 35 to 45 higher than among 15 to 25 age-group. The differences in the attack-rate of these age-groups diverged from the mean incidence to a variable extent on different stations. In the Pacific squadron (the exception alluded to above) there was no significant difference at all; while the South-East Coast of America squadron, although numerically the smallest force in the Navy, showed the highest attack-rate with the most marked age gradient. (There were 330 men under 25, of which 58 (± 1·8) per cent. got influenza, against 32 (± 2·3) per cent. of the 230 men over 25.) This small squadron also illustrated another point. The attack-rate of a ship infected with influenza may vary between 5 and 75 per cent. at different times and places; but if two or more ships are infected at the same time and place, the morbidity in each ship tends to approximate the same figure. The South American squadron consisted of four small ships only, which were all infected in January, 1890, at Montevideo. The attack-rates were 54, 49, 47, and 33 per cent.—all rates which were more than double the average of the whole Navy. On the other hand, if isolation is absolute, a ship will escape infection altogether, as is shown by the following natural experiment.

TABLE II.—*Influenza Incidence.*

AGE-GROUPING 1890 AND 1891.

	Age ..	15–25	25–35	35–45	Over 45	All ages.
1890	Number ..	30,020	17,310	5,150	870	53,350
	Rate % ..	16·0	13·6	11·9	13·9	14·8
		(±·14)	(±·17)	(±·31)	(±·7)	(±·1)
1891	Number ..	31,780	17,400	5,690	900	55,670
	Rate % ..	6·39	6·64	6·60	10·7	6·56
		(±·09)	(±·12)	(±·22)	(±·7)	(±·07)

In 1890 a training squadron of four cruisers in company gave leave at Barbadoes; the crews of these four ships fraternised freely ashore. The squadron left on March 7th. On the 8th a case of influenza reported sick in H.M.S. *Ruby* and, before the ship reached Bermuda on the 28th, 34 per cent. of the ship's company (260 men) of the *Ruby* had contracted the disease. Not a case of influenza occurred in the *Active*, the *Calypso*, and the *Volage*, who were proceeding in company with the *Ruby* to Bermuda.

This is a good demonstration of the efficiency of absolute quarantine in preventing the spread of influenza from ship to ship.

When the age-distribution of the 1891 influenza is examined, it is remarkable that there is no significant difference in the morbidity of the three lower age groups, such as occurred in the previous year. This contrast between 1890 and 1891 favours an hypothesis originally put forward[8] on a much smaller group of figures. In the dense population, common to all ships, when influenza is epidemic, no one can escape contact with the infecting agents, and the immunity of the subdivisions of the whole herd is approximated to the same level by symptomatic, and symptomless infection or by the mere absorption of influenzal antigens. At the commencement of the first wave of an epidemic of influenza the younger the group, the lower is its herd-immunity. Hence the brunt of the attack falls on the younger groups. These, as a result of this greater antigenic stimulus, receive a greater increment of immunity than that acquired by the older divisions of the herd. Therefore, when the whole herd is once again exposed to a similar risk of infection, the attack-rates in the various age-groups are found to have become more nearly equal.

Finally, Table II. shows that in 1890 the attack-rate for influenza, after falling with increase in age from 15 to 45, goes up again in the small group of men over 45; and the rate in this group during 1891 was 60 per cent. higher than in the three younger groups. I do not think this rise is necessarily a specific biological attribute of naval old age, but is more probably due to the fact that few ratings remain in the Navy after 45 and therefore at least half the members of this oldest group would be senior officers. The relatively sheltered life of officers in their separate cabins would tend to prevent them acquiring as much latent immunity as ratings during inter-epidemic times. But the officers' more screened existence would be inadequate to protect them from infection during an epidemic of ship influenza.

INFLUENZA IN 1918.

There was some doubt ashore as to whether the lethality of the 1918 influenza was really much greater than that of 1890, therefore the naval evidence on this point should be of general interest. In both the 'fifties and 'nineties there was little rise in the naval respiratory death-rate. In the two years, 1890 and 1891, there were only 16 deaths more than the 152 to be expected from the average death-rates of respiratory disease and influenza before and after the epidemic.

In 1890 the respiratory death-rate was 1·42. In 1891 it was 1·29. The average rate for the ten years 1886 to 1895 was 1·33, therefore in 1890, since the strength of the Navy was 54,000 men, six more deaths from respiratory disease occurred than were to be expected, to these must be added six, directly attributed to influenza, which was not included as a respiratory disease in the naval returns of these years. In 1891, six deaths are attributed directly to influenza but the respiratory death-rate was below the average.

Complete figures for the total force were not available for 1918, but 155 deaths were recorded in the Grand Fleet as due to influenza and pneumonia (mortality 1·72 per 1000). The only other war year for which the data is published was 1915, when there were 56 deaths from influenza or pneumonia in the Grand Fleet (mortality 0·44). Therefore in this division of the Navy the number of pneumonia deaths in 1918 was threefold that reported in 1915. In the South of England and some places abroad the naval influenza epidemic was much more lethal than in the Grand Fleet. H.M.S. *Africa*, the most severely smitten ship I have heard of, within about 10 days recorded 570 cases and 51 men died out of a ship's company of 779—a 9 per cent. case-fatality. This happened at Sierra Leone where she was in company with her sister ship H.M.S. *Britannia*, which reported very similar figures. Therefore in the Navy the 1918–19 influenza was a dangerous lethal infection compared to which that of 1890 and 1891 was a trivial ailment.

MAJOR AND MINOR RESPIRATORY INFECTIONS.

Table III. shows the recent distribution of major and minor respiratory infections in the Navy throughout the world. Taking the total columns first, the Home Station, because it includes the training depôts, has the heaviest incidence of both major and minor respiratory diseases. The Mediterranean, Atlantic, and West Indies have different but by no means trying climates. These stations show the lowest incidence of respiratory disease. While the three other foreign stations illustrated, the ships of which spend a large amount of time in the tropics, return the higher rates for both severe and trivial respiratory illness. The occurrence of respiratory disease among seamen has sometimes been loosely attributed to change of climate from hot to cold, on the assumption that the subject returning to a temperate climate from the tropics gets chilled before he readapts himself to the cooler atmospheric conditions.

In this connexion we may note that, on three of the stations illustrated, the men serve in both tropical and cold climates. From the West Indies the ships visit Canada and North America. The China station includes such places as North-East Coast of Asia and Japan where snow falls in the winter. Africa nowadays includes the Cape as well as the tropical West and East coasts. The only station to-day where the personnel may get no relief from tropical conditions all the year round is the East Indies, and on this station the incidence of major respiratory infections is greater than on any other foreign station.

I do not think, therefore, that change of climate from hot to cold can have much weight in the production of respiratory disease in seamen. In the case of tuberculosis of the lungs it is readily understood how exhausting conditions, such as those in a gunboat up the Persian Gulf, may light up a latent tuberculous focus. Also such conditions may lower individual resistance and permit auto-infection, or fresh infection, of the lungs with pneumococci or other organisms in subjects who would have remained immune from pulmonary symptoms in less trying climates. Table III. shows that the morbidity of the minor and major respiratory disease shows some tendency to be associated. However, the important fact that these figures reveal is that respiratory disease, provided other environmental conditions are held as constant, as in the Navy, is practically independent of climate and geography, and that it is possible to find as high or higher attack-rates for pneumonia, tuberculosis, tonsillitis, and colds in the head among sailors in the tropical zone as at Portsmouth or Scapa Flow.

TABLE III.—*Geographical Distribution of Respiratory Infections, 1922–26.*

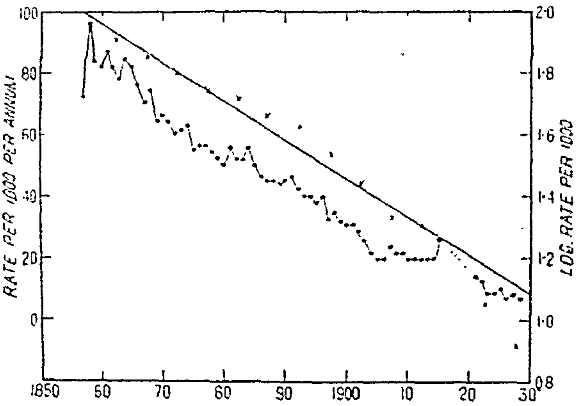
Station.	Mean strength (in thousands).	Major.					Minor.			
		Pneumonia.	Tubercle.	Bronchitis.	Pleurisy, &c.	Total.	Influenza.	Catarrh.	Sore-throat.	Total.
Home	37	3·2	2·3	5·4	5·0	15·9	33·2	71·2	36·5	140 9
Atlantic ..	21	1·3	2·0	3·0	2·8	9·1	24·5	46·6	24·5	95·6
Mediterannean .	18	1·1	2·4	2·7	4·2	10·4	8·3	56·1	23·7	88·1
West Indies ..	2	1·0	1·0	3·8	3·3	9·1	8·1	51·4	19·4	78·9
East Indies ..	2	3·7	2·8	5·0	3·7	15·2	8·1	77·1	30·0	151·2
China	5	2·0	2·5	5·7	4·8	15·0	23·4	85·0	28·1	136·5
Africa	1	2·9	3·3	4·2	3·3	13·7	11·3	65·9	29·9	107·1
Total Force..	90	2·2	2·3	4·2	4·4	13·1	23·6	61·6	29·6	114·8

Morbidity per 1000 per annum of mean strength.

Distribution of Rheumatism.

One of the most curious and inexplicable phenomena shown in these naval statistics is the rapid and steady fall of rheumatism since the 'sixties. Fig. 9 is a graph of the yearly incidence in the total naval force of those cases recorded under the heading rheumatism since 1856. The crosses on the diagram are the logarithms of the average rates for five yearly periods. They fall into a fairly straight line during the pre-war period, which means the rate of decline was fairly constant during this period. After the war the rate is seen to have been accelerated.

FIG. 9.



Rheumatism in Total Force.

These rheumatic figures appear to have been unaffected by the rate of recruiting, the proportion of the Navy serving abroad, and the accompanying incidence of other infections (except undulant fever). Seeing the great importance some authorities attribute to tonsillitis in the ætiology of rheumatism, it is noteworthy that during the time when the incidence of tonsillitis nearly doubled itself between 1890 and 1900, the decline in rheumatic incidence was actually accelerated. At one time I thought that there might be some ætiological connexion between the incidence of rheumatic disease and "fevers" (other than undulant), since the prevalence of the latter group of infections had shown a similar drop in the same period; and, moreover, rheumatism, like fevers, was also a small-ship disease. But if this was so, the geographical distribution of rheumatism ought to show some similarity to that of fevers.

Fig. 10 is a diagram of the incidence of rheumatism between 1887 and 1895 on the ten Naval Stations of that time. Rheumatism was a little more common abroad than at home, which was consistent with the view that this excess in morbidity might be secondary to tropical fevers. But except in the Mediterranean, rheumatic and febrile morbidities show no associations. In Australia for example, although the incidence of rheumatism was higher than in the East Indies and Africa, yet in the same period (1887–95) the incidence of continued fevers in the East Indies (210·6) was sevenfold that recorded on the Australian Station (29·3), and the incidence of malaria in the African squadron (234·2) was over six times as great as in Australia (35·5).

This seems to exclude either continued fevers or malaria from being a factor of any weight in the ætiology of rheumatism. Dysentery, a disease with occasional rheumatic complications, has never been prevalent enough in the Navy to exert an appreciable effect on the rheumatic returns even if such sequelæ were common.

The largest incidence of dysentery for the same period *1887–95 was 33 per 1000 for India*, followed by 5·2 for China. The "Irregular" force with the maximum incidence of rheumatism have only a rate of 0·9 per 1000 for dysentery and 56·2 for total fevers, continued and malarial.

The decline in naval rheumatism is very satisfactory but very puzzling; all we can note is that during the whole period the sailors' standard of living, diet, sobriety, and social behaviour has steadily advanced. There is even some flimsy clinical evidence that life in the Royal Navy of to-day actually ameliorates chronic rheumatic pain. Several retired officers, who rejoined the Service for the war, have told me their return to the sea coincided with the disappearance of their rheumatism to which they had been martyrs since their retirement. Is it conceivable some of these subjects were freed of their fibrositis because of, rather than in spite of, their return to active service at sea?

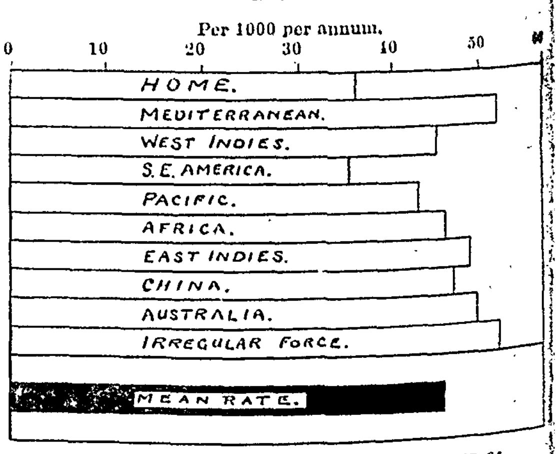
Distribution of "Tropical" Fevers.

Before discussing the distribution of fevers, a few words are necessary concerning the nomenclature used in the Navy for their classification. The infections that it is wished to consider are the so-called tropical fevers, entered in the naval statistics of to-day as malaria, typhoid, paratyphoid, Mediterranean, dengue, and sandfly fevers together with pyrexia of unknown origin (P.U.O.).

Between 1850 and 1860 this group of diseases were classed under two headings, the first "remittent and continued fevers," and the second "intermittent fevers." The latter heading must have mainly consisted of benign tertian and quartan malaria, and a few of the less severe types of subtertian malaria. The other group, labelled "remittent and continued" also included much malaria and all other types of fever from ephemeral fevers of one or two days' duration up to enteric and undulant fever of as many months on the sick list. After 1860 the naval nomenclature was changed. The single heading "remittent and continued" was divided into three: (1) remittent, (2) simple continued, and (3) enteric fever. Intermittent fever was now termed "ague." Ten years later, in 1870, the fever nomenclature was again revised. Remittent fever and ague were combined as "paroxysmal fever" which in 1886 was called "malaria." "Continued fever" and "enteric" remained as headings up to the war except subsequently "continued fever" became P.U.O.

The only other noteworthy change in classification was the award of a separate heading to Mediterranean fever in 1897. Before this date undulant fever seems generally to have been included in the remittent, paroxysmal, and malarial fevers of the different eras. *This is rather important, as one would rather have* expected it to be classed as a continued fever, and doubtless many milder cases were. The "continued fever" group of the naval statistics was, however, a kind of pigeon-hole which seems to have been used for any fever which had not obvious, malarial, enteric, or undulant characters. Several times in the naval reports a purist medical officer would ask why should an ephemeral fever of less than a week's duration be classed as continued, but, as a *matter* of fact, the

FIG. 10.



Geographical distribution of rheumatism 1887–95.

word had come to have much the same diagnostic implication as our modern P.U.O. In the earlier years such fevers as dengue and sandfly must generally have been classed as continued fevers, but sometimes they may have got out of the fever group altogether and been included with influenza and catarrh. Even as late as 1907 I remember returning cases which I am now convinced were sandfly fever as influenza. Apropos of such an error there is a natural experiment, related in the report of 1889, which records a small epidemic which was probably sandfly fever but is called influenza.

At Nauplia, one of the Greek Islands, as is common practice in the Navy when in out of the way places, 35 men landed from their ship for a picnic. Fifteen men returned to the ship before sunset, the remainder did not come off till after dark. The latter 20 men without exception got a fever which was recorded as influenza. The disease, however, puzzled the medical officer in that it spread to no one else in the ship, an event unheard of in real influenza. In the light of present-day knowledge the puzzle is easily solved by the habits of the sandfly which does not attack its prey till after sunset, and thus explains the escape of the 15 members of the picnic party who came off early and the failure of the fever to spread in the ship.

The falsification of the fever records by the minor fevers getting classed as influenza is probably balanced to some extent by the reverse process, because in the earlier years of the records one finds what appear to be typical explosive outbreaks of mild influenza in ships called "ephemeral fever" and classified as "continued fever." Besides the difficulty in nomenclature and diagnosis, great caution has to be exercised in drawing general conclusions from the total yearly incidence of fever in the whole Navy or on a single station. The incidence of fevers in ships show what may be called an "all or none effect" to a greater extent than the infections we have previously discussed, and an epidemic limited to a single ship may produce a large rise in the total incidence on a station or even of the whole Navy. The incidence and kind of fever depends far more on the geographical position of a ship than do any of the other common infections heretofore discussed.

For example in the years 1872 and 1873 the incidence of ague in the Mediterranean suddenly increased nearly threefold and then dropped back to its average level. Examination of the detailed returns showed that the greater part of this increase in malaria morbidity was due to the employment of one small gunboat with a company of only 5 men up the Danube for these two years. As a result, this ship returns 109 out of the total 223 cases of ague recorded in the whole Fleet. The incidence of malaria in this small gunboat was 50 times that in the rest of the Mediterranean Fleet (3100 men).

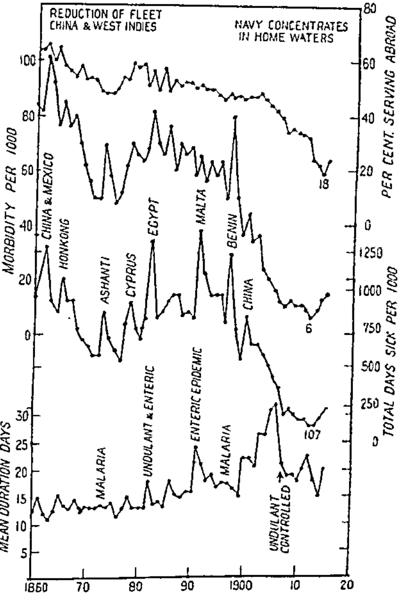
ENTERIC INFECTIONS.

Enteric fever is a disease which is usually contracted ashore and rarely shows much tendency to spread in a ship. As a rule, therefore, the enteric fever cases are fairly evenly distributed throughout the Navy in space and time.

Considering the density of the population, it is surprising how rarely intestinal infections do become epidemic in ships, and this is perhaps largely due to the ships natural conservancy system. The sea-going population from time immemorial has used that method which we are told is the hygienic ideal—namely, the removal of all excreta from the environment by passing it straight overboard, without its getting a chance of soiling anybody or anything. Occasionally, however, owing to food contamination by a carrier, or to other accident, enteric fever spreads in the ship itself, and a single ship produces a morbidity which may have a marked effect on the total figures of a station or even the whole Navy.

The largest discovered attack-rate for undoubted enteric fever, limited to one ship, took place at Phalerum in 1897 in H.M.S. *Forte*. Twenty-three per cent. of her complement (240 men) got typical typhoid fever. This single ship epidemic trebled the enteric-rate in the Mediterranean Fleet (from 3·3 per 1000 in 1896 to 10·2 in 1897). In 1924 history repeated itself in the *Royal Sovereign*. An accidental disobedience of the regulations allowed infected lettuce from a dangerous locality to get on board. As a result, she reported 67 out of the total 77 cases of enteric fever recorded that year for the whole Navy. Thus a mistake in the hygienic control of one ship was the cause of the Atlantic Fleet having a typhoid morbidity 20 times greater than the previous three years average, and trebled the expected incidence of enteric fever for the total Navy. (Total force 90,000, enteric-rate 1921–31 0·28, and in 1924 0·87).

FIG. 11.



Fevers (Total Force) 1860–1915. The top graph (scale on right) shows the percentage of men serving abroad; the second (scale on left) the morbidity per 1000; the third (scale on right) the total days of sickness per 1000; and the fourth (scale on left) the mean duration of sickness in days.

INCIDENCE OF FEVERS.

Bearing these remarks in mind, we may now examine Fig. 11 with advantage. The incidence of fevers, of course, must largely depend on the relative number of men serving abroad. The topmost graph shows the percentage of the total force on foreign service. The graph immediately below this is the attack-rate per 1000 for "fevers." During the earliest period in the 'fifties and 'sixties, the number of men serving abroad was reduced from about 65 to 50 per cent. of the total force, and the decline in fever dropped in much the same proportion. The number of men serving abroad and at home then remained almost equal till the beginning of the present century when the Navy started to concentrate in Home waters. Just before the outbreak of war 75 per cent. of the total force was at home. The fever morbidity shows a sixfold decline from about 60 to 10 cases per 1000 per annum, although the proportion of men on foreign service had only been halved. Moreover, the fever decline had definitely commenced before the increase in home service, therefore other favourable influences were at work besides the concentration of the fleet at home. The next graph shows the total days' sickness from fevers, or quantity of illness irrespective of number of separate infections. This graph tends to rise in the middle period as the incidence curve above tends to fall, indicating that the average number of days a case of fever was on the list had gone up, as is confirmed by the bottom graph which gives the mean duration of a case of fever. The lengthened duration was chiefly due to the increase in enteric and undulant fever, relative to other fevers, which occurred between the 'seventies and 'nineties. In 1900 both the incidence and amount of fever (the middle two graphs) started a continuous and rapid fall, at the same time the bottom graph rapidly rises. This decline is largely secondary to two causes, big ships tended to supplant small ones and fewer ships were employed in such places as the African rivers, thus the proportion of men at risk from insect-borne disease while abroad had decreased at a greater rate than the mere number of men on foreign service. Secondly, the ætiology of malaria now being understood, some fall in the incidence may be attributed to rational efforts at prevention. Advice on malarial prophylaxis, having regard to the part played by mosquitoes, was first given in the report on the Health of the Navy for 1900. In 1906 a sudden striking fall took place in the mean length of total fevers due to the control of that most protracted disease, undulant fever.

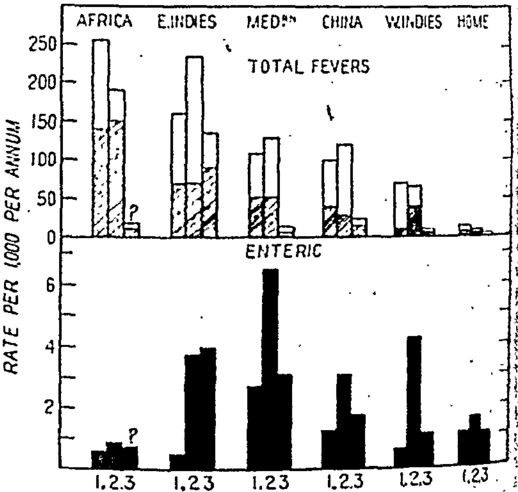
Before leaving Fig. 11 we may note how the peaks on these morbidity charts tell the history of naval operations during the period. These peaks are generally best marked on the graph of total days' sickness because whenever the Navy goes ashore enteric fever usually increases out of proportion to other fevers. Two notable exceptions are the Benin and Ashanti expeditions represented by large peaks on the incidence graph with no corresponding peak on the graph of the average duration of illness. These were West African expeditions. In this region, one of the worst places in the world for malaria, enteric fever has rarely given much trouble to the Navy, even when landed on punitive expeditions.

CAUSES OF IMPROVEMENT.

A graph such as Fig. 11 is often shown as an example of the wonderful effects of modern preventive medicine. I may be unduly pessimistic, but it appears that most of the tenfold fall in morbidity of total fevers, from about 10 to 1 per cent. of naval strength per annum, with the exception of the small decrease due to the irradication of undulant fever, is due to other causes than to methods deliberately undertaken to prevent disease; and chief among these was the diminution in the number of men at risk, secondary to: (1) less foreign service; (2) an increase in the average size of ships preventing a greater proportion of men on foreign service being exposed to infection in dangerous localities.

The geographical distribution of fevers is examined in Fig. 12 which visualises the incidence of total fevers, and enteric fever in the Home and five foreign stations in the early 'seventies, early 'nineties, and the five years prior to the war. In the top set of diagrams the fraction of morbidity due to malaria (ague plus the remittent fever of the 'seventies) has been shown shaded. Africa has always, till recent times, been the worst naval station for malaria, India for fevers other than malaria, though a good second for the latter complaint. There is not much difference on the whole in the incidence or geographical distribution of total fevers in the first and second periods. In the third and most recent period all fevers have shown a satisfactory decline, except in India. With regard to this notable exception, the East Indies is the only station where modern conditions approximate those of the old Navy, and a fleet of small vessels is employed doing boat work, cutting out slave dhows and gun-runners from pestilential creeks and rivers. In Africa it is questionable if the modern period is fairly comparable to the earlier ones, since there was then only in existence a Cape of Good Hope station, which undertook no river work or expeditions such as those which accounted for the African fevers of the 'seventies and 'nineties.

FIG. 12.



Geographical distribution of fevers. Shaded = malaria (ague and remittent). White = continued fever (P.U.O., &c.). Black = enteric (different scale). 1. = 1870–74. 2. = 1890–94. 3. = 1909–13.

Now let us examine the enteric incidence which is drawn to a scale 40 times that used for the total fevers. The generally low incidence of enteric fever during the first period may be somewhat artificial because enteric was only given a separate heading in 1869 and in the early 'seventies this infection was, perhaps, still sometimes entered under continued fever; but, on the other hand, the case-fatality, 22 per cent., for this period is not much higher than that to be expected if the standard for diagnosis was the same as in the most recent period. If the low recorded incidence in the earliest period represents fact I should attribute it to there then having been less leave facilities in big seaports where enteric, in peace time, is usually contracted. Malaria, on the other hand, relative to enteric is more often picked up by naval ratings while on duty in uncivilised native districts. Other noticeable points in this diagram are the relatively high incidence of enteric fever on the Home Station, the low incidence in Africa, and the fall in enteric morbidity on the other foreign stations, again with the notable exception of the East Indies. Public health experts say enteric fever incidence is the best index of sanitary efficiency. If so, the figures taken as a whole, especially those for the Home Station, suggest that there has been little change in the sanitary efficiency of ships themselves during the last 50 years. As a matter of fact, scrupulous cleanliness has always been the pride of the Navy since the earliest days, and since the cholera outbreaks in the 'sixties purity of the water-supply has received unremitting attention. These facts, combined with that method of refuse and sewage disposal which one might say has always been a specific attribute of the seafarers' habitat, have made the separation of human egesta and ingesta probably more nearly perfect in the men-o'-war of the *whole* period than in almost any other type of modern environment. If naval sanitation afloat has all the time approached perfection we cannot attribute the fall in morbidity to its improvement.

Indigenous Malaria in England.

A question of great local interest has always been, is there an endemic centre for malaria in the Medway estuary? In certain years it is noticeable there was a large number of cases of intermittent fever reported on the Home Station. For example, in each of the naval reports from 1857 to 1860 the Medway estuary is referred to as the only dangerous locality for fever in England. The following quotation is from the report for 1860.

> "There were 324 cases of an aguish character, this form of fever was most common in vessels stationed in the Medway especially at Sheerness; in fact a third of the total number of cases occurred in these vessels, the *Formidable*, [illegible], and the *Cumberland*, the Flag and Guard Ships permanently stationed at that port."

On looking up the complements of these ships, it is calculated at least 8 per cent. of their inhabitants got "ague" while in Sheerness. However, it must be realised that during this period some 5000 men had returned home from China wars, and many, if not the majority, of the infections reported on the Home Station were relapses in these men, many of whom had contracted malaria in China. Nevertheless, records of the time recognise this and specifically state that the intermittent fever cases reported from Portsmouth, and places other than the Medway estuary, were accounted for by relapses in men recently returned from foreign service. There seems little doubt that from 1857–60 cases of indigenous malaria were common in Sheerness. The establishment of this English endemic centre for malaria was apparently only temporary, depending on a plentiful supply of malaria carriers from the Far East, because in 1862 we find a medical officer saying he had seen no typical intermittent fever in the Medway estuary, and that therefore the cases alleged to have occurred there in previous years were probably not true intermittent fever, but due to mistaken diagnosis. This is the easiest and most satisfactory way of explaining away any observation which does not fit one's own experience—I am not guiltless of employing it myself. Nevertheless, we know that malaria was reported in men who had never been out of England from the same district during the Great War. At this time many sailors returned from the eastern theatre of the war with malarial gametocytes in their blood, and mixed freely with recruits who had never been out of England; and the summers were warm enough to permit the anopheline mosquitoes which abound in the Sheerness marshes to transmit the benign tertian parasite. Again, as in 1860, this endemic centre under modern conditions was unable to maintain itself for more than a year or so, since in recent years there have been no undoubted indigenous malaria cases reported in the Navy from the Medway estuary.

It is stated that there was a recrudescence of "ague" among the civilians of Sheerness in 1874, many of whom had lived for years in Sheerness immune from this disease. It is significant that this year corresponds to the return of the Ashanti expedition which, as we saw in Fig. 11, was responsible for one of the highest peaks on the fever incidence graph. There is, however, no marked increase in the naval malaria incidence on the Home Station for this year. After the Benin expedition in 1897, when the diagnosis of malaria was pretty accurate, home malaria goes up to 6·2 from 2·2, the average rate per 1000 of the previous ten years, but there is no reference in the naval report to malarial morbidity in the Medway estuary.

There seems no doubt that under favourable conditions, such as a hot prolonged summer, a plentiful supply of anophelines, the return of malaria-infested troops from a foreign campaign can establish a temporary endemic malaria centre in certain parts of England. How far this mechanism has been responsible for the English intermittents of historical times is an interesting speculation.

Some General Conclusions.

I will conclude this lecture with a summary of the chief lessons learnt from this study of the distribution of infectious disease in the Royal Navy. One must remember we have been dealing with a selected, specialised, and semi-isolated community, living in an exceptional environment, and that therefore the utmost caution is necessary in accepting any conclusions to which these naval figures point as being of general application. Naval morbidity has undergone a threefold reduction within 70 years. Part of this reduction is due to alterations in the geographical distribution of the Fleet, to a greater use of larger ships, and to a decline in the rate of recruiting, as well as to hygienic improvements and deliberate prophylactic procedures in the Navy itself. Again, an unknown fraction of the improvement in the health of the Navy is secondary to the parallel improvement in conditions ashore; because all infection in ships is originally derived from the shore and therefore the naval morbidity must also depend to some extent on the quality and quantity of infection among the civilian population. Moreover, the incidence of disease in the Navy during any period is not only a function of the morbidity ashore during that period, but also depends on the conditions ashore during the 15–20 years which each member of the naval population spends in the outside world before joining the service. In regard to this point the question arises, has the general drop in morbidity ashore been in any way proportionate to the decline in naval incidence of non-tropical diseases? Morbidity figures ashore are hard to come by. From Glover's [9] discussion in last year's Milroy lectures it would seem that the incidence of rheumatism in England, especially acute rheumatism, has shown a marked decline since 1850, but a decline which is not commensurate with the sixfold drop in the naval rheumatic incidence. All things considered, I think it is fair to attribute some of the decrease in the total naval morbidity to deliberate improvements in the naval environment, and if so, the whole fall in naval non-tropical disease is not merely part of a general phenomenon.

One important lesson this naval study teaches is, that, under conditions of maximum population density, the incidence of droplet-borne disease need be no higher than among a similar age-group living in far more spacious surroundings. And I think this observation illustrates a principle of wide application —namely, that density, other factors being equal, is not necessarily associated with an increase in clinical infection even should it be constantly associated with increased latent infection. For example, if a long enough period is taken, it is found that in recent times the rural morbidities of many infectious diseases may be higher than the urban.

An unexpected discovery was that during the last 70 years there had been no reduction in the mean duration of any common infection (except syphilis). Thus modern treatment can have had no significant effect in curtailing the time required for individual infections to run their course. There is no obvious reason for not believing that this observation would be found to be universal, if statistical data as complete and reliable as that for the Navy were available for other environments.

The lack of any significant variation in the geographical distribution of respiratory disease in the Navy was rather unexpected. This phenomenon could be a specific character of the naval community, which results from its keeping the same immediate environment wherever it goes. Moreover, every time a ship commissions at a home port for foreign service (for two or three years) she embarks a fresh stock of home-grown bacteria. On the other hand, Europeans abroad live most their lives away from home and in general occupy far more spacious and better-ventilated quarters than they would in England, and also the number and closeness of their contacts with their fellow men is almost negligible as compared with the naval community. Hence the impression of most tropical practitioners that respiratory infections are comparatively uncommon among Europeans dwelling in the tropics may be correct. Nevertheless, impressions are treacherous and there is much evidence that in the densely populated native towns of the tropics, respiratory disease is as rife as in Europe. For example, Rogers[10] shows by comparing a series of post-mortem examinations in Calcutta and London that respiratory disease was a more common cause of death in the Indian than English sample. But these figures do not differentiate between natives and Europeans; also mortality is not always directly proportional to morbidity. Whether naval respiratory disease in the tropics is caused by English bacteria indigenous to the ship itself, or by organisms introduced from the immediate port of call, the one thing which strikes the observant naval surgeon when first he goes abroad in a big ship, after doing an intensive course in strange tropical diseases, is that he does not see them; and each morning he finds, awaiting him in the sick bay, a very similar collection of ailments whether his ship is lying in Hong-Kong, Trinidad, or Portsmouth harbour.

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THE MIDDLESEX HOSPITAL NURSES' HOME.—Last week Prince Arthur of Connaught unveiled a tablet in the main entrance hall of the new home of the nursing staff in Foley-street, W., "as a record of their admiration for the public spirit and generosity which prompted such a noble gift." Prince Arthur said that the building, which has cost £300,000, "is, for the moment, and perhaps for all time, the finest institution of its kind in the world," with "an almost extravagant allowance of bathrooms, hot points, hair-drying machines, and its own hair-dressing saloon." Also there are swimming baths, badminton and tennis courts, and smoking-rooms. "It would," he added, "have been utterly beyond the power, or even the right, of any hospital to provide on such a splendid scale for the comfort, the well-being, and the happiness of the nurses."

OBSERVATIONS ON SKIN ERUPTIONS FOLLOWING VACCINATION.

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VACCINATION is in many instances followed by skin eruptions which may vary considerably, both in the character of the individual lesions and in their number and distribution. Nowadays a large number of people are primarily vaccinated only when they are directly exposed to small-pox infection, as for example when a member of their family contracts the disease. It is comparatively common for the medical attendant to be asked to see a successfully vaccinated patient who has developed an eruption about 14 days after the appearance of the rash in the primary case. In these circumstances there is often much difficulty in deciding whether the eruption is vaccinal, or whether it is a rash of small-pox modified by vaccination.

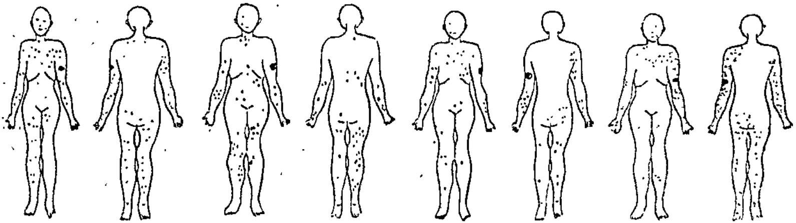
Accidental vaccination lesions may appear either in the neighbourhood of the original vaccination site, or in any other situation on the body, as a result of the introduction of the virus into a wound or abrasion. In this way a mother may be inoculated from the vaccinal pustule of her child, or the child may reinoculate itself. There is a greater tendency for this to occur when there is pre-existing skin disease, such as impetigo. Auto-inoculation is not, however, common and should not take place if proper precautions are taken to protect the vaccinated area. Lesions of accidental vaccinia may be distinguished from the focal rash of small-pox by their distribution and their number, but it must be remembered that the inoculation lesions not infrequently met with in small-pox are very similar in appearance. Patients—especially those who are small-pox contacts—displaying such pocks should be kept under observation for a few days and carefully examined for the presence of a generalised small-pox rash.

It is important to bear in mind that vaccination performed early in the period of incubation, even if carried out too late to prevent the patient from contracting small-pox, may yet have the effect of modifying the rash very considerably, thereby causing the lesions to be few, atypical and difficult of recognition. The inflammatory reaction round the place of vaccination often causes an aggregation of small-pox papules in this situation and, when the rash elsewhere on the body is meagre, it may pass unnoticed and the true nature of the condition be overlooked. On the other hand, though vaccination has not been successful, the irritation caused by the scarification may be sufficient to attract a number of small-pox lesions round the site, giving rise to an appearance somewhat resembling that of a successful vaccination.

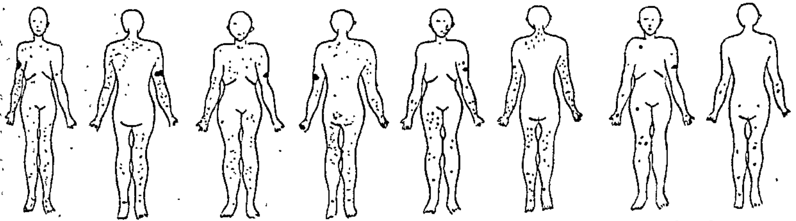
A local erythema is an almost constant accompaniment of vaccination and, although generally confined to a small zone round the seat of inoculation may, if the reaction be excessive, increase in size until a large portion of the arm is affected. Sometimes when adhesive strapping is employed, the skin beneath it gets irritated and secondarily infected, and a number of superficial pustules appear at these points.

A punctiform erythema which sometimes develops round the site of vaccination is described in the report of the Committee on Vaccination. This erythema embraces a portion of the affected arm, the whole arm, or the arm, chest, and axilla on one side of the body. This type of rash is caused by the irritation of the strapping which is used to keep the dressing in place, and ceases to appear when bandages are substituted. If strapping is applied to the unvaccinated arm and a bandage is used on the vaccinated arm, the rash only appears in the former case. Rashes met with on the ninth and tenth days of vaccination were of three types—a papulo-vesicular, an erythematous, and a serum type. In the first variety the lesions commenced as papules and passed through a vesicular stage before scabbing, but many of them aborted in the papular stage. Rashes in the second group varied from punctate erythemata to those consisting of maculæ with small subcuticular hæmorrhages. This rash was usually confined to the vaccinated arm, but in two cases the distribution and appearance were suggestive of small-pox. In these two cases the rash was limited to the axillæ, forearms, thighs, buttocks, perineum, groins, and lower part of the abdomen. In one of them the rash was finely punctate and purpuric, whilst the other was morbilliform, becoming purpuric later. The serum type of rash resembled that which sometimes appears after the administration of antitoxin, the lesions preponderating on the vaccinated arm.[1]

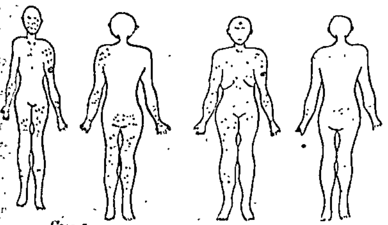
CHARTS SHOWING THE DISTRIBUTION OF THE RASH AND THE SITE OF VACCINATION IN TEN CASES.



Case 1. Case 2. Case 3. Case 4.



Case 5. Case 6. Case 7. Case 8.



Case 9. Case 10.

Ricketts[2] excluded "accidental and unspecific" eruptions, and generalised erythematous rashes "doubtless caused by the circulation in the blood stream of the secondary products of inflammation absorbed from the vaccine pustule." He divided generalised eruptions composed of distinct elements into two groups. In the first group the rash consisted of small superficial papules (vaccinal lichen), or of minute vesicles, or a mixture of both. These he considered were not due to a generalisation of the vaccine virus, but were probably toxæmic. They generally occurred in children, the lesions being small and superficial and the distribution not that of small-pox. Rashes of the second group were composed of small papules, superficial in position and having vesicular or pustular heads. They more closely resembled the lesions of modified small-pox than those of the previous group. The rash was sparse, and all the lesions were superficial, as opposed to modified small-pox in which some will be situated in the deeper layers of the skin. Of vaccinal eruptions in which the lesions are larger and even more akin to those of small-pox Ricketts had had no experience. He considered them to be of the utmost rarity, though he had no reason to question the possibility of their occurrence. He found the rashes in both groups more apt to affect the trunk than the limbs, a distribution more suggestive of chicken-pox than of small-pox.

Robertson[3] states that cases are recorded in which a generalised vaccinia appeared as a result of the child's sucking the vaccine pustules on the arm of another child. Ker[4] describes a generalised papular eruption appearing between the fourth and tenth days after vaccination and coming out in crops, in which the papules pass through vesicular and pustular stages; the eruption is consequently heterogeneous and all stages of development may be noted in the same patient at the same time.

It is not unreasonable to assume that the introduction of vaccine lymph into the body may be followed by a serum rash in the same way that the administration of antitoxic and other sera is often succeeded by such a rash. Serum rashes are usually classified as erythematous, scarlatiniform, morbilliform, and urticarial, a description coinciding with that of many of the rashes appearing after vaccination. By far the greater number of post-vaccinal rashes are accidental, and are either in the nature of serum rashes or are due to the absorption of toxic products from the vaccinal pustule. Other symptoms of serum disease are *not often* encountered, and there is no evidence to show that the introduction of a small quantity of serum into the system during the operation of vaccination acts as a sensitising dose, indeed, post-vaccinal rashes of any type are rare among revaccinated subjects.

Generalised Vaccinia.

Specific eruptions—i.e., those composed of distinct elements—are rarely seen, whilst a generalised vaccinia is a still rarer condition, and medical literature contains little account of it. In prevaccination days, inoculation of small-pox was widely practised as a preventive measure, and was often followed by a focal rash of small-pox. Inoculation with the virus of cow-pox persisted for some time after the introduction of vaccination and was made illegal by the Vaccination Act of 1840. There is a possibility that many of the cases of generalised vaccinia recorded were really eruptions of small-pox. Woodville,[5] in 1799, reported a number of cases in which a general pustular rash appeared after vaccination performed for the most part at the small-pox hospital. Lymph from such patients was sent out as cow-pox, and was often followed by an apparently variolous rash. Jenner,[6] in regard to this occurrence, stated, "Where variolous pustules have occurred I believe variolous matter to have occasioned them." Lymph obtained by him from one subject was found to contain both vaccinia and variola simultaneously. A generalised vaccinia can occur as a result of the introduction of the virus into abrasions or septic areas on the skin, either from *contamination of the clothing* with the matter from the pustule or by scratching. The number and situation of the secondary lesions so produced will therefore depend on the number and situation of the sites at which auto-inoculation takes place, and the presence of an old skin eruption or of recent wounds will afford a clue to the real cause of the condition. If, however, there is reasonable personal cleanliness, and the protective dressing is adequate and frequently changed, there is little risk of secondary vaccinia, and even when a skin disease is present it should not be considered a contra-indication to vaccination during a small-pox epidemic.

It is difficult to estimate the frequency with which post-vaccinal rashes occur. Rolleston[7] quotes the following figures to show the rarity of generalised vaccinia. Chauveau in France *noted* six to eight cases among 500,000 to 600,000 vaccinated; Hastud described four cases occurring in Denmark between 1888 and 1898 out of 39,915 vaccinations; Vogt found five in 100,000 vaccinations in Germany.

Pearson,[8] writing in 1799, mentions that, with two or three exceptions, lymph distributed to 200 practitioners gave rise to no general eruption. Inquiry among a number of public vaccinators of many years' experience elicits the information that general rashes following vaccination are seldom met with, while no record can be obtained from them of a single case of generalised vaccinia.

Fourteen cases in which vaccination was followed by a general rash were examined during the six months April to September, 1930, in a metropolitan borough. Approximately 1600 persons were vaccinated during this period. All the patients were brought under notice either because they were notified as *suffering from small-pox or* were discovered during the routine examination of small-pox contacts, the only exception being one case met with in a non-small-pox contact and reported by a public vaccinator. In every instance vaccination was primary, performed with Government lymph, with one insertion. The average age of the patients was 5½ years, ranging from 2 to 14 years. Ten of the children had been definitely exposed to small-pox infection; two of them had no history of such exposure, while the remaining two were doubtful. Six of the patients presented an eruption which was maculo-papular on the first day of efflorescence but became somewhat morbilliform in 24 to 48 hours. In certain of these patients the rash was accompanied by a varying number of urticarial blebs. Three children showed rashes composed of small, rather indefinite papules and macules somewhat similar to those of rubella, which disappeared in the course of a few days. In the severer types of rash small crusts appeared on many of the papules after the lapse of three or four days. A rash of vaccinal lichen was encountered on one occasion; it consisted of 20 or 30 scattered papules, each surmounted by a crust. A further crop appeared, but there was neither pruritus nor erythema. Pruritus was rarely met, even in the more profuse eruptions, and in no case did the papules progress through vesicular and pustular stages. Every eruption was distributed in a manner more suggestive of small-pox than of chicken-pox, in so far as the lesions favoured the limbs rather than the trunk; the face however usually escaped, or was only affected to a slight extent. The immunity enjoyed by the face was in itself almost sufficient to rule out the possibility of the eruption being variolous. On the buttocks and thighs the rash was often present in excessive amount, a frequent feature in small-pox eruptions in young children. Although the distribution was in some ways akin to that of variola, the individual lesions displayed a noticeable indifference to points of pressure and areas of irritation; prominences and exposed surfaces were not picked out at the expense of hollows and protected situations. The irritation of the vaccination did *not* even cause an aggregation of papules in its vicinity; on the contrary, this region was always free from eruption, although it often blended with the perivaccinal zone of erythema at its margins. In about half the patients the rash was in greater evidence on the vaccinated arm during its early stages, but by the second or third day this excess was much less noticeable. As distinct from modified small-pox, the individual elements of these rashes were uniformly superficial, and though in many cases the rash bore a certain resemblance to that of modified small-pox, the large irregular macules and the urticarial wheals so often met with on the second and third days of the eruption could in no way be mistaken for that disease, however modified its form. There did not appear to be any definite relationship between the severity of the local reaction and the quantity of the rash. The absence of constitutional disturbance both before and after the appearance of the rash was a constant feature in these cases, but this, during the present small-pox epidemic, is a circumstance to which too much weight should not be attached.

The rash most often appeared on the eleventh day—i.e., at about the time when the vaccinal reaction is at its height and desiccation is about to commence. The earliest day on which it appeared was the ninth, and the latest the thirteenth after vaccination.

One case in which the rash was confined to the vaccinated arm deserves mention.

The patient, a female of 20, primarily vaccinated 12 days previously, showed some local œdema and hyperæmia, with a few small pustules round the vaccine pustule. These were probably due to mild secondary infection of the raw surfaces beneath the adhesive strapping. The axillary glands were enlarged and tender and there was a good deal of discomfort in the arm. Above and below the zone of erythema were a number of circular macules about one-tenth of an inch in diameter, extending upwards as far as the anterior axillary fold and downwards to the wrist. On the following day many of these had become definite papules, but the rest of the body remained unaffected. The papules did not mature and at the end of a week had entirely disappeared.

It has to be remembered that a much modified small-pox rash may coexist with a post-vaccinal one, and it may in these circumstances be almost impossible to arrive at a correct diagnosis of the condition.

Case 10 illustrates this. The child had a fairly profuse eruption on the arms, legs, upper part of back, shoulders, buttocks, and groins, with only one lesion on the face. The rash was composed for the most part of small, superficial papules, though some of them were deeper and suggestive of small-pox. On the thighs and buttocks the papules were generally smaller, and were surmounted by crusts. In this region there were also a few patches of erythema, the general appearance here being non-variolous. Apart from the extreme paucity of rash on the face, the distribution favoured small-pox, especially in the tendency of the outcrop to favour prominences. There was no excess of rash on the vaccinated arm, and the local reaction was of but moderate severity. In view of the possibility that some of the papules were variolous, the child was sent to hospital as a case of small-pox. After discharge the boy was re-examined, and it was found that, apart from one or two small areas on the buttocks, there was neither pigmentation nor pitting to mark the site of the rash.

It is not certain to what extent the use of a certain batch of lymph is followed by general rashes. The appended Table gives the number of cases occurring in each family and the number of people in that family who were vaccinated at the same time.

Family No.	No. of cases of rash	No. of persons in family successfully vaccinated at the same time.	Family No.	No. of cases of rash	No. of persons in family successfully vaccinated at the same time.
1 ..	1	7	7 ..	1	3
2 ..	1	7	8 ..	1	1
3 ..	1	6	9 ..	1	1
4 ..	1	5	10 ..	2	6
5 ..	1	4	11 ..	3	5
6 ..	1	4			

More than one of the families mentioned above may have been vaccinated with lymph from the same batch, but as far as can be ascertained this was not the case, though definite information was not available. It will be seen that though in some cases one person only was attacked out of seven vaccinated, in others two out of six and three out of five were affected. In considering this matter the two factors: excessive susceptibility of certain individuals and increased toxicity of certain batches of lymph, have to be thought of; it is probable that the latter cause seldom operates.

DIFFERENTIAL DIAGNOSIS.

In the examination of recently vaccinated persons who have general eruptions the possibility that the disease may be modified small-pox or one of the other acute infectious diseases must always be considered. The presence of coryza, cervical adenitis, and faucial congestion will be of assistance in diagnosing measles, rubella, and scarlet fever, whilst consideration of the following points should enable the observer to exclude modified small-pox: (*a*) the superficial nature of all the lesions; (*b*) the preponderance of the rash on the vaccinated arm, and its absence over the actual vaccination site; (*c*) the comparative freedom from rash enjoyed by the face; (*d*) the indifference of the lesions to points of pressure and irritation; (*e*) the absence of vesicular, pustular, and crusting stages at definite intervals; (*f*) the duration of the period from the date of vaccination to the appearance of the rash; and (*g*) the absence of pre-eruptive illness.

Lichen urticatus is practically indistinguishable from vaccinal lichen, though the former condition is usually of longer duration, with a frequent history of previous attacks. Pruritus is a constant feature, and wheals appear as a result of scratching. Twenty children notified as suffering from small-pox were examined during the five months April to September, 1930, and were found to be suffering from lichen urticatus or papular urticaria. The rash in the majority of these cases displayed a preference for the limbs and buttocks, and was often very prominent on the extensor surfaces of the forearms, the thighs, and the palms and soles. In two such cases in which vaccination was performed there was little change in the appearance of the existing lichen, even though the local vaccinal reaction was moderately severe.

Conclusions.

The majority of post-vaccinal rashes are accidental and are caused by the absorption of secondary products from the vaccine pustule, or are allied to serum rashes. Specific eruptions are much less frequent, while generalised vaccinia is extremely rare. Its occurrence is probably always due to auto-inoculation, in which the lesions are those of accidental vaccinia; if there is strict cleanliness it should not occur.

Most of the rashes encountered were maculo-papular, becoming morbilliform later, while they were often accompanied by urticarial blebs and patches of erythema. The distribution was similar in every case, the rash showing a preference for the limbs, but the face remained relatively free. The rash usually appeared on the eleventh day of vaccination, all the subjects being primarily vaccinated children between 2 and 14 years. The evidence as to whether the rash followed the use of a certain batch of lymph was inconclusive.

In all cases in which doubt exists as to the true nature of the condition it should be treated as small-pox, and the patient who has recently been successfully vaccinated may safely be sent to the isolation hospital.

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* For further information see McVail, Treatise on Hygiene and Public Health: Stevenson and Murphy, 1893, vol. ii., pp. 418, 419.

MODIFICATIONS OF KIRSCHNER'S WIRE EXTENSION METHOD.

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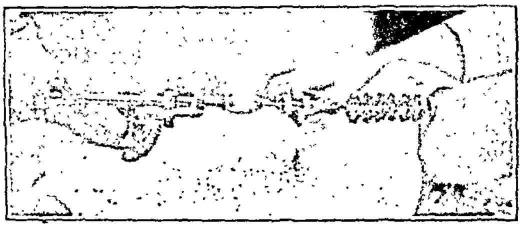
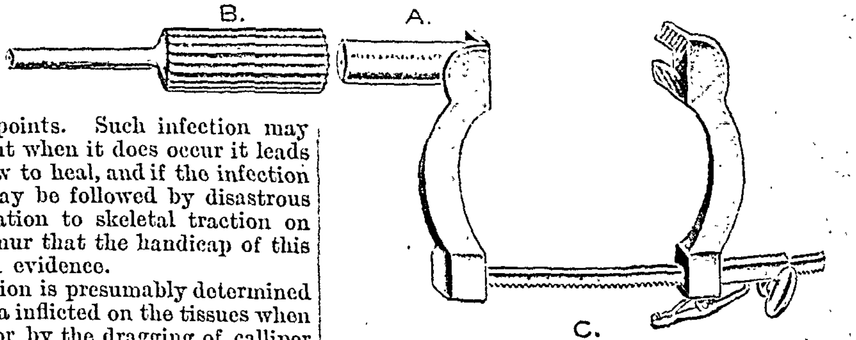
ALTHOUGH the value of skeletal traction was demonstrated by Steinmann[1] in 1907, it is only in the last five years or so that its use has been popularised in this country. It has become generally recognised that in dealing with a recent fracture of a long bone adequate long-axis traction applied directly to the lower fragment makes it possible to correct shortening and obtain correct alignment in a large proportion of these injuries. Under such treatment bone repair proceeds on normal lines and the risk of infection or delayed union which is involved in any method of direct operative attack is avoided. The recognition of this fact has tended gradually to increase the use of skeletal traction at the expense of operations for open reduction and internal fixation. The essential mechanical factor in the method is a secure hold on the distal fragment; the original Steinmann pins, nails, and various callipers which have been introduced are efficient from this point of view, and yield satisfactory positional results. The splint employed does not materially affect the issue provided that it allows for easy adjustment and control of joint position; Braun's or Hey Groves's skeleton cradles or a Thomas splint, bent and slung as may be necessary, conform to this standard. The one drawback to the method has been the occasional incidence of infection in the track of the pin or calliper points. Such infection may not be very common, but when it does occur it leads to sinuses which are slow to heal, and if the infection is at all near a joint may be followed by disastrous stiffening. It is in relation to skeletal traction on the lower end of the femur that the handicap of this complication is most in evidence.

FIG. 1.



Kirschner's stutz harmonica in use.

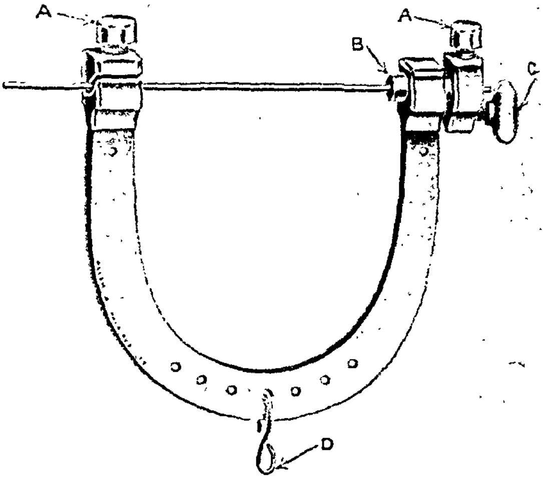
FIG. 2.



Author's clamp guide for introduction of wire through bone.

The liability to infection is presumably determined by the amount of trauma inflicted on the tissues when the pin is introduced, or by the dragging of calliper or pin subsequent to its first application. The substitution of fine steel wire for the more robust structures was first brought in during the second Balkan War (1913) by Teutonic surgeons. Klapp[2] extended its use subsequently and an ingenious method for introducing the wire was put forward by Kirschner[3] in 1927, who also invented a bow strainer. I think there is no doubt that a wire properly introduced and tensioned reduces local trauma to the minimum and consequently reduces the risk of infection. Evidence in favour of this view may be adduced from the rapid growth in popularity of the method on the Continent in the last few years. I have employed it for the last 18 months on fractures of both the lower and upper extremities, and in no instance hav I seen infection of the wire track. At first sight i would appear that a fine wire through which a pul of 20 lb. or more is being put would cut through bone In practice this does not seem to be the case. Block and Koch[5] carried out some experiments on animal and found that in the absence of suppuration only a small cut through of the wire was observed. If th track was infected the wire rapidly cut out.

FIG. 3.

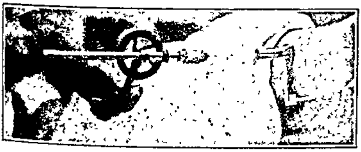


Author's wire strut with self-contained strainer.

Appliances for Passing the Wire.

It seems then that we here have a method o skeletal traction which approaches the ideal. I enables traction to be maintained for longer periods than is possible with the older methods and makes i possible to apply it to smaller bones such as those of the hand or forearm without risk of splintering o infection. The only drawback that can be urged against the method is that it requires some elaboratio of apparatus. Kirschner's stutz harmonica (Fig. 1) for the introduction of the wire is both ingenious and effective, but the apparatus is costly and not very durable, nor is it easy to sterilise. Several other appliances for passing the wire are on the market, the best being perhaps Loth's; *most of them serve their* purpose fairly well, but seem to me to be either cumbersome or slow in their action. With a view to overcoming these difficulties I have devised a very simple guide which seems to me of some value (Fig. 2). It consists of a clamp adjusted by a thumbscrew working on a ratchet (C) to which is adjusted a cylindrical block (A) in the long axis of which a hole is drilled large enough to take the ordinary size of wire employed. For transfixion of the os calcis, tibia and fibula, &c., with a short wire the single block guide is sufficient. In order to transfix a thick section of bone such as the lower end of the femur, a longer wire must be used, and therefore more support is required. This is supplied by an additional guide (B) which is made to telescope over the first. The clamp is screwed firmly home and held in position by an assistant during the process of drilling. It will be found that this enables the wire to be introduced accurately in a required direction. The wire can be introduced by an ordinary hand drill, or if it happens to be available, with an electric drill. The advantage in the use of the latter is, I think, merely one of time-saving. When the ordinary hand drill is used an os calcis can be transfixed in about 20 seconds and a more substantial bone such as the femur may take a few minutes. I do not think that the slower introduction has any material bearing on the risk of infection. The heat generated by a motor-driven wire may produce necrosis in the bone track: I have, however, seen no disadvantage arise from this cause in practice. In this country the use of an electric motor is discouraged by the aggravating variations in the type and voltage of current supplied.

FIG. 4.



Author's clamp guide in use.

Tension of the Wire.

Various kinds of wire have been used for bone transfixion. Kirschner recommends the use of chromium-plated piano wire; this resists the necessary tension better than rustless steel wire. Three sizes of wire are commonly used—viz., of a diameter of 0·8, 1·0, and 1·5 mm., in accordance with the weight to be applied.

Before applying traction the wire must be tensioned sufficiently to keep it straight. Several different kinds of strainer have been devised for this purpose. The original substantial horseshoe introduced by Kirschner seems to be the only one which will maintain full tension for a long period under a heavy pull. Its only drawback is that a special detachable strainer is required to tighten the wire in the first place, and this must be employed when a full length of wire is present. It cannot be used again during treatment as the wire ends will have been cut off. In order to overcome this disadvantage I have had a small self-contained strainer incorporated with the horseshoe (Fig. 3). It consists of a movable sleeve (B) to which the wire is fixed by a grip screw. The sleeve can be withdrawn by a thumbscrew which will be found to tension the wire to the required amount. Adjustment of tension can be made with this mechanism at any stage of treatment. It will make the matter clear if I describe in detail the use of this guide and strainer.

A wire of suitable thickness is fitted into a drill. The wire should not be longer than is necessary to fit the strainer. It will be found that a 5 in. wire can be introduced if only the single guide A is used. If the wire is too long it will be found that the whip between the drill and the guide is so great that drilling is carried out with difficulty. The thicker the wire, the less the tendency to whip. If a wire of 6 in. or more is to be passed the telescopic extra guide B must be employed. The telescopic guide should at the start of drilling just engage the fixed guide A. This gives a total support of 5 in. When the guide B has been pushed right home by the drill end on to A the wire is released from the chuck and the telescoping guide B is removed. The drill is then reattached and drilling completed through the main guide A (Fig. 4). For transfixion of a tibia or femur I have usually employed a wire of 1·0 mm. in diameter. For forearm and fingers a wire as thin as 0·8 mm. has proved satisfactory. The pointed end of the wire is passed through the guide, made to puncture the skin, and pass directly down to the bone. Passage through the bone is effected by steady action of the drill. Should an electric motor be employed the passage only requires a few seconds. The wire will puncture the skin at its exit. The drill is then detached from the wire, the clamp is released by means of ratchet C, and the end to which the guide is attached drawn off the wire; the other section of the clamp is then released. A horseshoe strainer of suitable size is then applied. The holding screws A and A are screwed firmly home, the sleeve B being pushed in as far as possible. Then, by turning the thumbscrew C right-handed so as to withdraw the sleeve, the wire can be tensioned to the required degree. Traction is applied through the hook D after the limb has been placed in a cradle splint.

The instruments I have described have been made for me by Messrs. Allen and Hanbury, of Wigmore-street.

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A SIMPLE METHOD FOR BLOOD CULTURE.

BY J. E. MCCARTNEY, M.D., D.SC. EDIN.,
DIRECTOR, SOUTHERN GROUP LABORATORY, LONDON COUNTY COUNCIL.

BLOOD culture has always presented difficulties, particularly when it is carried out some distance from the laboratory and the culture medium has to be sent by post or messenger. Containers stoppered with cotton-wool cannot be used, while the ordinary laboratory glassware, such as flasks with rubber stoppers, leave much to be desired. Flask and stopper cannot be sterilised together, and there is always a risk of contamination when the rubber stopper is removed, either by air organisms entering the mouth of the flask, or from dust between the stopper and rim of the flask. The flask is fragile and awkward to pack and transport. To overcome these difficulties the following simple piece of apparatus has been devised.

It consists of a 6 oz. (actually 170 c.cm.) capacity white "medical flat" bottle, with a screw cap.*

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* Made by United Glass Bottle Manufacturers, Ltd., 40–43, Norfolk-street, Strand, London, W.C.2.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS.

THE March meeting of this Section was held, by consent of the Vice-Chancellor, at the University of Bristol on March 7th, Dr. H. W. FEATHERSTONE, the President, in the chair. A symposium on the

Barbiturates in Anæsthesia

was opened by Dr. M. NIERENSTEIN, who described in detail the chemistry of barbituric acid and its derivatives. He showed that all those drugs which have recently attracted so much attention, from veronal through allonal and medinal to sodium amytal and nembutal, are attributable to the chemical work of Nebenthau in 1898–1901. The Nebenthau factor, NH–CO, the exclusion of mobile hydrogen and the various side chains, were explained by the speaker, who showed how the presence or absence of narcotic properties in any given organic compound of this series could be foretold. Chemically he had little to say in favour of pernocton, but showed how the asymmetrical carbon atoms of amytal and nembutal favoured their absorbability by the human body. Veronal, luminal, allonal, and neonal he regarded as chemically identical. Dr. Nierenstein regretted the fact that hitherto all the chemical advances from barbituric acid had been made along the line of least resistance, and thought that perhaps more valuable compounds could be obtained if chemists sought those that were less easily constructed.

Mr. A. L. TAYLOR, regarding the barbituric compounds as hypnotics, analgesics, or anæsthetics, had sought to arrange their qualities in accordance with molecular weights, stability, relationship between minimum active and lethal doses, and excretory facility. He found that a quick breakdown in the organism, and consequent irrecoverability from the urine was essential if these bodies were to act as anæsthetics. A small dose and rapid decomposition were desirable and these were represented in nembutal.

Mr. A. L. FLEMMING spoke from clinical experience, and pointed out the necessity for prolonged care and watchfulness over patients in the recovery stage of anæsthesia after the use of barbiturates.

Mr. W. S. V. STOCK had been using pernocton systematically for three months and was well pleased with it. He gave it at the rate of 1 c.cm. per minute and preceded it by an injection of morphia given 20 minutes earlier.

Dr. FEATHERSTONE had employed sodium amytal and nembutal, either by the mouth or intravenously, both for normal labour cases and for Cæsarean section with spinal analgesia. For the latter purpose he gave grs. 4½ by the mouth one hour before operation. No other medication was employed, and he varied the dose down to grs. 3 for feeble, pale, or undersized patients. The patient was kept quiet in a darkened room till the time came for the spinal injection. Then she was turned gently on to the side. She was usually asleep or tranquil if awake. The injection was then made through an intradermal wheal raised by novocain. The eyes were then covered and the patient arranged on the operating-table. At this stage there was often discomfort and sometimes retching before one used nembutal. In most instances after the use of nembutal recollection of the operation was hazy, if there was not complete amnesia. There was great difficulty in gauging the dose to give by the mouth. Sometimes the full effects were present a quarter of an hour after the capsules had been swallowed, in other instances more than twice as long was necessary. No second dose was given. The uterine contraction was good in every instance and the child unaffected except for slight sleepiness. There was never any depression of breathing in the infant. Out of 11 patients one had severe headache for two days. Restlessness or pain after the operation was controlled by gr. ⅓ or gr. ¼ morphia. In the presence of serious renal affection one should be wary of employing nembutal. Intravenous sodium amytal and nembutal had not proved satisfactory in combination with spinal analgesia, the fall in blood pressure being too great. With regard to midwifery he had found that 1 g. of sodium amytal injected intravenously just before full dilatation of the os produced painless labour. The frequency of uterine contraction was unaffected and the child in no way embarrassed. The dose must be given slowly. Sodium amytal was preferable to nembutal, the effect lasting longer. A normal woman after 1 g. would go through 6–10 hours of labour with little more than a dim memory of the pain occurring at the time of the actual birth of the child. After quick deliveries patients often remembered nothing from the time of the injection till hours after the delivery. The regular contractions of labour continued with the same rhythm during and after the injection of the drug. There was some danger of precipitate passage of the head over the perineum with resulting tear. At the time of delivery there was sometimes excessive restlessness making the patient hard to control. A series of small doses of amytal proved less satisfactory than the one big dose.

Mr. F. S. TAIT corroborated Dr. Featherstone's experiences with sodium amytal and related the details of a primipara whose labour was conducted under the influence of a dose of 0·5 g. given in five minutes. Pains were then occurring every five minutes. The birth had taken place 2½ hours later. The baby cried directly after birth and the mother when fully conscious two hours later had no knowledge of the confinement at all. Mr. Tait laid stress on the difficulties sometimes arising from restlessness and on the danger of precipitate expulsion when the head reached the perineum.

Dr. H. H. RUBRA pointed out the advantage of sodium amytal in operations for submucous resection of the nasal septum. A bloodless field was easily obtained. He gave morphia one hour before and grs. 6–9 of amytal. He thought that no barbiturate should be employed in the presence of any active lung lesion.

Dr. LANGTON HEWER had employed nembutal by the mouth and referred to the difficulty of estimating the correct dose and to the idiosyncrasy towards the drug which might be encountered. In one instance a man of 30 who received grs. 4½ of nembutal and then nitrous oxide and oxygen was semi-delirious on recovery and then vomited for six hours. On a second occasion he underwent a similar operation under nitrous oxide and oxygen preceded by "Hyoscine" A and was not sick at all.

Sir FRANCIS SHIPWAY regarded all intravenous methods as associated with a certain amount of inevitable risk. He had seen good results from nembutal by the mouth associated with small doses of morphia. This combination, however, was never to be employed upon children.

Mr. R. J. CLAUSEN spoke strongly in favour of pernocton. He found that to combine it with morphia was an uncertain proceeding, some patients requiring more of the pernocton and taking longer to become anæsthetic than when no morphia was used.

After the discussion Prof. R. J. BROCKLEHURST demonstrated two cats who had been given, one sodium amytal and the other nembutal by intraperitoneal injection. The dosage had been several times as great as that used with human beings. The narcotic effect was obviously extreme and both animals appeared more dead than alive. They breathed, however, now and then, and the blood pressure only occasionally fell excessively.

SECTION OF PSYCHIATRY.

AT a joint meeting of this Section with the Society for the Study of Inebriety on March 10th, the chair was taken by Dr. S. A. KINNIER WILSON, President of the Section, and a discussion on the **Prevention and Treatment of Drug Addiction** was opened by Dr. WILLIAM BROWN. He divided the patients into four classes: (1) those who had become victims through taking drugs for pain or sleeplessness—not more than 3 per cent.; (2) those who had taken them to seek some new experience—over 90 per cent. of all addicts, consisting mainly of persons of the criminal class; (3) those who had taken them to increase efficiency in work—the extremes of the creative artist and the manual labourer; (4) those who had taken to drugs for special reasons of their own. Methods of prevention differed in the different classes. In the first class the underlying illness should be dealt with; in the second class the treatment lay in preventing access and moral infection and in strengthening character and helping its development; in the third class other steps to increase efficiency should be taken and the drug traffic must be attacked; in the fourth class the method of prevention took a general character of sympathetic investigation of the cases and use of suitable psychological methods.

Physical methods of treatment were indispensable in all but the slightest cases and involved residence in a home for slow detoxication by special methods, such as the production of hyoscine delirium and sweating. The psychological aspect was of the utmost importance, both in prevention and cure. The patient's mental constitution was one that demanded excitement; many addicts were of the cyclothymic type and found that morphia relieved their periodic depression. They were people who wished to get out of the express train of existence and play in the fields in the sun; they did not wish to be cured and their scale of values was demoralised. Hypnotism was justified, if the patient could be hypnotised, to mitigate the pains of disintoxication. It served as an alternative stimulus, but analysis was always necessary as well, and should be prolonged if possible so that the cause of addiction could be made clear. The patients needed to be trained in the use of their wills; an essential part was calm belief in the success of their efforts and a resolution in which the whole mind was involved. They must be helped to get completely at one with themselves. The doctor must not hesitate to use the transference situation and give himself up to his patient until recovery was attained. Treatment should be continued for years, as there was great danger of relapse.

INTERNATIONAL ASPECT OF THE PROBLEM.

Dr. EDWARD MAPOTHER said that the problem was a small one in this country; the Home Office only knew of 250 addicts. The cure of addiction was the task of the doctor and often a hopeless task. Prevention was the better way, but this depended on the politician. Any real progress depended on the development of an international conscience. Attempts to find an alternative local anæsthetic to cocaine had unfortunately proved unsuccessful. The difficulties with opium and its derivatives were political rather than pharmacological; the necessary goodwill and good faith were lacking. Turkey, Russia, and Persia had refused to regulate their output. International control was therefore conducted by a system of licences which left the loyal countries at the mercy of unscrupulous producers in other countries unless smuggling could be made unprofitable. In England only one firm was manufacturing cocaine and only two were manufacturing opium derivatives. Turkey exported 14 tons of drugs last year, an amount exceeding the needs of the world, and obviously meant for smuggling. Japan manufactured enormous quantities of cocaine. In America over 100,000 addicts were known, but over half a million were known in Egypt. Opium was being replaced by narcotic alkaloids in China, with disastrous results, and there were now millions of true addicts. In these matters England was one of the model countries of the world. There was little smuggling, and, despite the vigilance of the police, there had only been 70 prosecutions during last year, most of them for minor book-keeping offences. The illicit supply by chemists or doctors was very small indeed.

The cocaine habit in this country was hardly ever the result of medical treatment, but addiction to morphia or heroin usually followed treatment. Cocaine was usually taken to induce pleasure and morphia to reduce displeasure. The part played by an underlying psychopathic constitution was much disputed; it was possible to think too biologically and neglect the psychological element. In countries where these drugs were habitually taken in small quantities cases of addiction were few. The people who took drugs were the spoilt-child type who could not forego immediate gratification for a delayed motive; they were also sexually promiscuous, hence the frequent association of drug-taking with prostitution.

Dr. MACDONALD CRITCHLEY said that, although the cure was psychological, physical methods had a place and might do valuable preliminary spade-work. Divers cures and régimes had been advocated. The oldest recommended massive doses of sedatives, of which hyoscine had become the most popular, although many preferred the less violent belladonna. Lambert and Tilney had introduced a treatment to fix the morphia antibodies which they believed to be the cause of withdrawal symptoms, and forbade sedatives. Later workers had failed to substantiate the early promise of this method. During the last six months an insulin treatment had been suggested and great success had been claimed for it. Adrenalin, subcutaneous oxygen, and endocrine substances had been tried by other workers.

IMPORTANCE OF FATIGUE IN MORPHINISM.

Dr. F. G. LAUGHTON SCOTT thought that Dr. Brown's third class was as numerous and important as all the others together. Many medical men adopted morphia in times of stress and continued it for its stimulant and not its narcotic effect. The majority of English

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society on Feb. 18th, with Prof. GRAHAM SIMPSON, the President, in the chair, Mr. W. J. LYTLE read a paper on the

Injection Treatment of Hæmorrhoids.

Despite the good and lasting results of operations for the cure of hæmorrhoids, treatment by injection of sclerosing fluids was, he said, being employed with increasing frequency. Apart from its safety, the advantages of the method were that it required neither anæsthetic nor confinement to bed and that it caused no pain. The solution which had given the best results was 5 per cent. carbolic acid in almond oil, as suggested by Albright and Blanchard. This solution was preferable to the older 20 per cent. carbolic acid in glycerin. The injections were most conveniently made in the left lateral position with the aid of McEvedy's lighted speculum. The solution (3–5 c.cm.) was injected well above the level of three selected piles into the submucosa. At this level the mucous membrane was insensitive to pain. Two subsequent injections were made at weekly intervals, each of them below the level of the previous one. Simple uncomplicated internal piles should be selected for treatment by this method. Those which were prolapsed and thrombosed or were complicated by fissure in ano were unsuitable for injection. The immediate results were excellent. All symptoms disappeared after the first or second injection. In his own cases it was too early to speak of the final results, but the good effects appeared to be permanent. No complications were to be feared except ulceration from inadvertent injection of the solution into instead of beneath the mucous membrane.

Mr. Lytle also described the treatment of fissure in ano and pruritus ani by the injection of anæsthesin, benzyl alcohol, and ether or percaine in oil as suggested by W. B. Gabriel. For anal fissure Mr. Lytle advised injections of 2–5 c.cm. into the sphincter. This produced a relaxation of the muscle which allowed the fissure to heal. If a sentinel tag was present it should be removed. In deeply undermined fissures operative treatment was necessary because, although symptoms were relieved by injection, the fissure would not heal because the parts were not at rest. In cases of pruritus ani which failed to respond to other methods he had found that the injection of these anæsthetic solutions into the subcutaneous tissues around the anus were often very beneficial.

REPORTS AND ANALYSES

MARSHALL'S LYSOL.

(LYSOL LIMITED, RAYNES PARK, LONDON, S.W. 20.)

AT the request of the manufacturers we have made an exhaustive examination of Marshall's Lysol. The tests have been carried out on samples of the disinfectant purchased by us from a retail chemist.

We can confirm that the Rideal-Walker carbolic coefficient of this disinfectant solution, using *B. typhosus* as the test organism, is indeed the 2·5 claimed for it; in our actual experiment the value 2·54 was obtained.

In practice Marshall's Lysol should be a reliable disinfectant when used as directed—that is to say, a dilution of 2 : 100 for washing the hands and 1 : 100 for the patient's body. The action of the disinfectant upon *Staphylococcus aureus*, *Streptococcus pyogenes*, and *Streptococcus hæmolyticus* is quick and effective in these dilutions as the following table of experiments will show :—

Micro-organism and temperature.		Maximum time required to kill in—		
		Dilution—		
		1 : 200	1 : 100	2 : 100
Staphylococcus aureus ..	37° C.	5 min.	30 sec.	Less than 10 sec.*
	18° C.	20 min.	2½ min.	22 sec.
Streptococcus pyogenes ..	37° C.	5 min.	30 sec.	10 sec.
	18° C.	22 min.	2½ min.	25 sec.
Streptococcus hæmolyticus	37° C.	2 min.	15 sec.	Less than 10 sec.*
	18° C.	10 min.	1¼ min.	12 sec.

* It was not found possible to measure times of less than 10 seconds with any degree of accuracy.

The two temperatures chosen, for the test of the power of the disinfectant in regard to each of the organisms, were selected as representing the normal body temperature on the one hand and that of a cool room on the other, since in this way the action of the disinfectant is seen under what may be called working conditions. It is, of course, a well-recognised fact that disinfectants work more slowly at a lower temperature than they do at the temperature of the body, and it is therefore of great importance that temperatures lower than that of the normal body also should be used in assessing the value of a disinfectant which may at certain times be called upon to carry out its action at a temperature as low as that of a cool room.

From the Table it will be evident that Marshall's Lysol possesses some selective action in regard to its disinfectant action on cultures of *Streptococcus hæmolyticus* since, for the same concentration, it is capable of destroying this organism in a shorter time than the others used in our tests.

We found the disinfectant to be free from alkalinity, but at the same time, from the nature of the preparation, it is a good solvent for grease and therefore possesses considerable powers of penetration.

Chemically we can confirm the presence of more than 50 per cent. cresol. Inorganic sulphur compounds were absent and organic ones present in negligible amount only. Pyridine and naphthalene as impurities were present to the extent of less than 1 part in 5000.

The disinfectant as sold contains no sediment and yields clear solutions with water; a 5 per cent. solution in distilled water failed to show the presence of any sediment on standing.

SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Last year this hospital admitted 4112 in-patients and treated 16,890 new out-patients. A new X ray department was opened and three new wards will be ready for occupation shortly. The maintenance and income for the year was £30,015, and the expenditure left a credit balance of £130. Of this income £10,201 was derived from the contributory scheme and £2004 from payments by patients. The in-patients remained on the average 13·71 days.

REVIEWS AND NOTICES OF BOOKS

A Short Practice of Gynæcology.

Sixth edition. By HENRY JELLETT, B.A., M.D. Dublin, F.R.C.P.I., Consulting Obstetrician to the Department of Health, New Zealand; Consulting Gynæcologist and ex-Master, Rotunda Hospital, Dublin; and RICHARD E. TOTTENHAM, B.A., M.D., D.P.H. Dublin, F.R.C.P.I., Professor of Obstetrics and Gynæcology, University of Hong-Kong. London: J. and A. Churchill. 1930. Pp. 525. 21*s.*

THIS new edition of Jellett's well-known text-book has been thoroughly revised by Prof. Tottenham, and incorporates the more recent advances in gynæcology. The book is now 100 pages larger than its predecessor, the increase in size being due chiefly to the introduction of an excellent chapter on sterility, of an account of the treatment by radium of cancer of the cervix, and of a large number of new illustrations, many of which are taken from American sources. Neither here nor in previous editions has any account been given of ectopic gestation, which is the more regrettable since this condition figures largely in modern gynæcological practice, and is always treated in gynæcological wards. In the section on radium it is not clear whether the dosage recommended refers to the element or to the salt, and we doubt the wisdom of such a dogmatic statement as that "radium is not contra-indicated in cases of cancer of the cervix in pregnant women, and living children have been born afterwards." Certainly living children have been born, but their birth is hardly desirable since a large proportion of them are likely to be microcephalic idiots! For this reason it should be made a rule to terminate pregnancy immediately if radium is applied to the cervix. No mention is made of the Heyman technique, an important omission at a time when his methods of radium treatment are being largely adopted in this country.

In operative technique the authors show a decided preference for American methods. Several ways of performing total hysterectomy are described, but little guidance is given on such an important matter as the preliminary treatment of the vagina; nor do we find any clear assessment of the advantages and disadvantages of total as compared with subtotal hysterectomy. The retention of the term "ventral" hysterectomy has no virtue, especially since in the illustrations the better known term "abdominal" hysterectomy is used. One important diagnostic sign in cancer of the cervix—friability—is ignored. It is questionable whether tapping an ovarian cyst prior to removal as advised in the text is ever justified. Ten pages are devoted to a gallant attempt to deal in a logical way with endometritis. All our old friends, glandular, interstitial, and cystic endometritis, and mixed forms that most of us had thought decently buried in oblivion, are given a new lease of life; while under the terminology uterine displacement 12 diagrams are devoted to making plain the mysteries of dextroversion and flexion and sinistroversion of both uterus and cervix. These, however, are but unimportant smudges on an excellent canvas.

Dr. Jellett's attractive style is a recommendation for any text-book, and this has suffered no eclipse in the present edition. The student and practitioner will find the book sound, trustworthy, and for the most part up to date.

Lehrbuch des Stoffwechsels und der Stoffwechselkrankheiten.

By S. J. THANNHAUSER, Professor of Medicine, Düsseldorf. Munich: J. F. Bergmann. Pp. 741. M.56.80.

THIS work presents the known facts of metabolism and metabolic disease in a way which is unfamiliar to readers of British text-books. Prof. Thannhauser seems to combine to an extraordinary degree those qualities which are now beginning to dominate the medical world—we mean the combined qualities of the clinician and the laboratory worker. His work is already well known in the sphere of biochemical research, and in this volume he shows what is meant by the "rapprochement" of the ward and the laboratory. In some sense this book may be regarded as an index of the type of knowledge which is likely to be demanded from the physician of the future. The day of vague generalities is over, and the processes involved in disease can be studied adequately only by those who are prepared to take profound pains to become acquainted with physico-chemical phenomena in addition to the outward manifestations of clinical signs and symptoms. Prof. Thannhauser has not contented himself with a pedantic presentation of metabolic diseases, but has indicated the problems and lines of research which might lead to fruitful results. The literature has been searched with painstaking thoroughness, and the separate sections can be recommended as valuable starting points for the young worker beginning research in metabolic disease.

A feature of interest is the valuable chapter on the metabolism of pigments. Admirably complete and detailed discussions on certain classical problems are presented—for example, the transformation of fat to carbohydrate. The author gives apparently unequivocal evidence against the views of Geelmuyden and others with great energy. It seems likely, however, that the difficulty in the direct demonstration of the reversible reaction fat $\rightleftarrows$ carbohydrate will one day be overcome, and that the power of the body to perform even this feat will be demonstrated. Up-to-date information on the uric acid problem is supplied, and suggestive experimental work is described. Diabetes is dealt with in a masterly fashion, and the scientific principles of the treatment of this condition are fully presented. The water economy in the organism is discussed, and the modern theories of œdema are critically examined.

The book may be recommended to the clinical research worker and the general physician as a stimulating contribution to medical literature.

Diseases of Children.

By BRUCE WILLIAMSON, M.D., M.R.C.P., Physician to the Royal Northern Hospital; Assistant Physician to the Prince of Wales's General Hospital. Edinburgh: E. and S. Livingstone. 1931. Pp. 290. 10*s.* 6*d.*

DR. WILLIAMSON has made it his aim to provide a really short but complete account of diseases of infancy and childhood. This task is not an easy one, and moreover the exact scope of a book of this kind, when completed, is difficult to assess. Dr. Williamson has managed to produce a work which, though highly condensed, has distinctive features of its own, and is not a mere excerpt from text-books. It is dedicated to Dr. G. A. Sutherland, and the evidence which it shows of the influence of this teacher will give pleasure to many readers. The section on cardiovascular disease is perhaps the most interesting and original part of the book. Great stress is laid on the differentiation of intrinsic and extrinsic tachycardia, which is determined by comparison of the sleep-rate and the "alert-rate," and by the effect of holding the breath in producing vagal stimulation and slowing. The short accounts of the common fevers and of infant feeding are useful.

This book should be of service for revision purposes, and as a vade-mecum for busy practitioners.

The Human Body.

By LOGAN CLENDENING, M.D. London: A. A. Knopf. 1931. With 102 illustrations. Pp. 399. 10*s.* 6*d.*

WE are glad to see a second (and cheaper) edition of this excellent popular guide to anatomy, physiology, and disease. Lay people are always liable to be got at by cranks and faddists to whom the profession will not listen. We have here a sane and accurate account of health and sickness by a sensible and kindly human being who happens also to be a well-informed medical man. Some people are disgusted with their bodies and do not want to know anything about them; those who do cannot do better than go with Dr. Clendening.

William Stewart Halsted, Surgeon.

BY W. G. MACCALLUM. London: Humphrey Milford, Oxford University Press. 1930. Pp. 241. 12*s.* 6*d.*

THIS short biography of a well-known American surgeon will possess many points of interest for English readers, and Dr. MacCallum the author, being pupil, colleague, and tried friend of Halsted, has been able to produce a sympathetic and intimate piece of work. Halsted graduated in medicine at Yale in 1874, and thereafter New York was the scene of his early activities. His labours here in the cause of education and in association with the work of several large general hospitals were intense, and he earned the reputation of being a brilliant technician. Later he migrated to Baltimore, and in 1889 we find him Associate Professor of Surgery, with a chair at the medical school of Johns Hopkins University then nearing completion. At Baltimore he added to his fame, and here he may be said to have accomplished the three great aims of his professional life—the promotion of better modes of technical procedure in surgical operations, the study of certain notable problems in disease with which his name is fully associated, and the establishment of a school of surgery. In this triple range of work he received the assistance, among others, of William H. Welch, William Osler, and Harvey Cushing. Brilliant as much of Halsted's work was, it is not so much the surgical procedures and inventions as his general attitude towards surgery that made him notable, and that attitude is well described in a brief prefatory note by Dr. Welch who calls attention to Halsted's love of truth, clearness in formulation of problems, and fairness in interpretation of results. His extraordinary neatness and accuracy professionally was reflected in the carefulness of his attire which in many men would have been considered sheer affectation, but in Halsted was an expression of his passion for finish. "Every detail," we learn, "was guarded—every suit of clothes, and he had dozens of them, was made by the best tailor in London. His shoes he had made in Paris, for some strange reason—and there he insisted on selecting the particular place in a skin from which he would have the leather cut. . . . Shirts he had made at Charvet's in great numbers from carefully chosen material, and these were for years sent to Paris to be laundered." Eccentricity? No, for his procedures here belonged exactly to the central inspiration of his conduct of life, which the external mannerisms illustrate.

We get from this short book a vivid sketch of an interesting man; Halsted devoted wide learning to the advancement of the general good while adhering rigidly to individual conceptions. The description of his final illness and death after operation for gall-stones forms a very interesting chapter in which it will be seen that the probability of approaching death had no influence on the outlook of the patient.

Bell's Sale of Food and Drugs.

Eighth edition. By R. A. ROBINSON, Barrister-at-law, Chief Officer, Public Control Department, Middlesex County Council. London: Butterworth and Co. and Shaw and Sons. 1931. Pp. 299. 15*s.*

ENLARGED in scope, the eighth edition of Bell's Sale of Food and Drugs forms a reasonably complete text-book to the Parliamentary and departmental legislation relating not only to adulteration but also to such diverse matters as the use of preservatives and colouring matter, the special designations of milk, cow-keeping, and the conveyance and storage of milk, the sale of food by weight, the grading and marking of agricultural produce, and the indication of origin (under the Merchandise Marks Act of 1926) of imported food such as honey or raw tomatoes. These matters are neither simple in form nor easily found without guidance. Strong complaint was made, during a recent debate on the Expiring Laws Continuance Bill, of the inaccessibility of the Sale of Food Order, 1921; what survives of this relic of the food control period is printed in the volume under review. As for the form of the law, a long overdue step was taken when the Sale of Food and Drugs Acts were repealed and replaced by the consolidating Food and Drugs (Adulteration) Act of 1928. But no sooner had the structure been neatly renovated than an awkward patch was added by the Artificial Cream Act of 1929. The editor, Mr. R. A. Robinson, observes that Section 1 of the Artificial Cream Act apparently does not apply to articles of food like cream buns which do not "purport to be" cream though they may be thought to contain it. A similar doubt, officially expressed by the Department of Health for Scotland, was recorded in our columns (THE LANCET, 1929, i., 1271) after the passing of the Act. The point was raised recently on a test action brought against J. Lyons and Co. (reported in THE LANCET, 1930, ii., 821). The prosecution related to "cream sandwiches (vanilla filled)" and "Swiss rolls (chocolate sponge, cream filled)"; a case was stated to the Divisional Court whence the matter was sent back to the Swindon justices for a further statement. Parliament ought not to set such conundrums to manufacturer and consumer. Mr. Robinson, who has admirable qualifications for the task, has discharged his duty as editor of this work with judgment and thoroughness.

THE LANCET.

LONDON: SATURDAY, MARCH 14, 1931.

THE END OF STATUS LYMPHATICUS.

One of the great lessons to be learned in the post-mortem room is the determination of the body to go on living. There is seldom any cause to wonder why the person is dead; there is often reason to be amazed that he has lived till his organs have reached the stage of disorganisation which is revealed by dissection. The most elementary student realises how little lies between life and death for the normal healthy body, and how very seldom that little gives way and fails. Occasionally it does, and persons die in whose history and autopsy no adequate cause can be found. It goes a little against the grain with the expert pathologist to have to say that he can find nothing to account for death. The circumstances are often tragic, and it is simple humanity to search for some explanation which will satisfy the modern mind where the "visitation of God" would once have been enough. Hence the doctrine of "status lymphaticus" which, owing to our ignorance of the anatomy of the normal healthy human body, has survived longer than it should.

In January, 1926, the Medical Research Council and the Pathological Society of Great Britain and Ireland jointly formed a committee for the investigation of "status lymphaticus," and for the collection of information on a large scale on the weights and measurements of the thymus gland. An earlier inquiry, organised by the late Prof. Emrys-Roberts, had resulted in the accumulation of a certain amount of material and the publication of an interim report,[1] but the number of records was too small to permit of any authoritative conclusions. A scheme was then initiated for the collection of a much larger mass of material. The special objects of the investigation were primarily (1) to establish by means of a large series of weights and measurements the standards of weight for age and proportion to body-weight of the normal thymus at all ages, and (2) to investigate closely the precise cause of death in persons dying suddenly from unexplained or trivial causes where the only apparent abnormality was the presence of a large thymus. A number of investigators were appointed in certain large centres of population, and special record cards issued. The cases in which information was specially desired were divided into two categories: (*a*) cases of sudden death in apparently healthy persons of any age, and (*b*) cases of death in persons of 15 years or over who had an apparently glandular thymus. After the inquiry had been in progress for some time, coroners began to cease ordering autopsies in ordinary street accident cases, with the result that there was a great reduction in the amount of available material. At the termination of the inquiry a total of 710 record cards had been collected by Dr. Howel Evans, the secretary of the committee. Of these, 30 had to be discarded because they gave insufficient information, leaving 680 available for analysis.

A preliminary pathological scrutiny and classification of the material was undertaken by Prof. H. M. Turnbull, and the final statistical analysis by Dr. Matthew Young, both of whom were members of the "Status Lymphaticus" Committee. The value of the results obtained is enhanced by comparison at every stage with the figures of Hammar, Bratton, and Greenwood and Woods. The conclusions reached have now been published[2] and may be summarised as follows (the actual figures are given in a series of 15 tables). The average weights of the normal thymus shown for the several ages from one year upwards, and the mean percentage proportions of thymic weight to body-weight, may now be considered as well established within narrow limits since the new figures are in close agreement with those of other recent observers. The mean absolute weight of the thymus, and the mean ratio of thymic weight to body-weight at ages 0–1 year, sensibly exceed the corresponding values based on data published by Greenwood and Woods and by Bratton from the London Hospital, but the data are not numerically adequate to warrant any emphasis being laid on the differences observed. There is no evidence in the relatively few data available that acute diseases of short duration—i.e., under three days—reduce the average weight of the thymus to an appreciable degree. It emerges from this study that an abnormally large thymus *in itself* cannot be considered to be indicative of "status thymico-lymphaticus" when no obvious cause of death is found post mortem. In the series of *normal* cases under investigation a thymus which may be considered abnormally large for the age was found in 20 subjects, 10 of whom were under and 10 over 16 years of age, but of this number in only four, in which the death was attributed to anæsthesia or shock, can any special liability to death be assumed to have possibly existed or the cause of death be regarded as inadequately explained. It is impossible to judge the adequacy of anæsthetics or shock as causes of death because their effects cannot be measured in the dead body. The cases in which death was attributed to anæsthetics or shock are, therefore, most important and have been given in detail. Twenty-three such cases were studied. Of the four in which the thymus can be considered to be abnormally large for the age, in one a major operation had been performed, in one purulent bronchitis, dilatation of the right ventricle, and hypertrophy of the left ventricle were noted at necropsy, and in the other two the conditions were apparently similar to those in other cases in which the thymus was not unusually large. In the normal series of cases at ages 0–16 years there appears to be little, if any, association between the weight of the thymus and the amount of lymphoid tissue in the various parts of the body, in so far as this amount can be indicated by volumetric measurements of the faucial and lingual tonsils, selected lymph glands from certain sites, Peyer's patches, &c. There is no definite evidence in the relatively few data available of any concomitant general hyperplasia of lymphoid structures in cases with an abnormally large thymus. The amounts of lymphoid tissue in the several parts of the body, *in so far as they* can be considered to be represented by the selected criteria, seem to show practically no association with one another to which any significance can be attached.

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[1] Jour. Path. and Bact., 1925, xxviii., 132.

[2] Ibid., 1931, xxxiv., 213.

In a series of subjects with Graves's disease there is evidence that the average gross weight of the thymus is distinctly above the normal, thus providing confirmation of what is more or less general opinion based on naked-eye observation that the thymus appears to be almost invariably abnormally large in this affection. Though the data available do not warrant any definite conclusions, they suggest strongly that the percentage proportion of glandular tissue in the thymus is above normal, but that there is no definite general hyperplasia of lymphoid structures in this affection. There is no evidence in the series examined of an association between arterial hyperplasia and an abnormally large thymus. In the opinion of the committee the facts elicited in the present inquiry are in harmony with those of HAMMAR, and GREENWOOD and WOODS, in affording no evidence that so-called "status thymico-lymphaticus" has any existence as a pathological entity. It appears, therefore, that we have to accept the fact that a few people, especially children, die when we cannot see why they should. If there is an inherent constitutional vice in some persons which makes their response to an anæsthetic dangerous to life, it is certainly not represented by the state of their thymus and lymphatic glands. The personal defect may be discoverable; on the other hand, it may not exist. Children have had far less opportunities than adults of training themselves to meet the changes and chances of life; perhaps it is natural that their bodies should stop working more easily.

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HEGI'S FLORA.

THE index-volume of the great Illustrated Flora of Central Europe has just reached us, completing a work[1] of almost unexampled collaboration between author and publisher which has taken 25 years to complete and has cost over £50,000 to produce. The Flora may commend itself to the medical reader for a number of reasons. The publisher tells us that it was his success with illustrated medical atlases which induced him to embark on his plan of an illustrated flora, and he had the sagacity to choose the curator of the Munich Botanical Garden to help him in realising his scheme. Prof. GUSTAV HEGI was then only 30 years old and has become middle-aged before his work was finished. He has himself written two-thirds of the 7800 pages, supplied nearly all the 5000 illustrations in the text, and read three times the galley proofs of the 13 volumes which his publisher has called, with some bitterness, the unending tapeworm. And with some reason, for the first conception of the book was in one volume with a hundred coloured plates, and the prospectus issued in 1906 invited subscriptions for three volumes in 70 instalments with 280 plates. But the LEHMANNS did not then reckon with their author. Whenever, he complained, he was just in fine fettle to describe a plant, he had to leave off for want of space, and soon he was no longer content with a mere description of the plant but wandered off into the circumstances of its growth, its habits of life and minute structure, its particular significance in the life of animals or human beings, its place in folk-lore, in pharmacy, in medicine, in literature. After having dealt with all of these he would run on to consider the good or harm which it might produce; finally he forgot the limitation imposed in the title and brought in the related plants of other countries outside Europe. When the first volume was ready it was already clear that at least six would be needed, and LEHMANNS had to break their troth with the 5000 original subscribers who knew nothing of the mentality of the Munich curator but who were fortunately for the most part confirmed lovers of flowers and were reconciled to further outlay. No concession, however, satisfied Dr. HEGI and gradually the three volumes became 13. Even the war did not slacken his pen and publication was continued as long as paper lasted out, but when it failed there was a gap until 1923 when many of the original subscribers were dead or missing and the fifth volume could only be delivered to 1800 of them. The position seemed almost hopeless but gradually many of them turned up again, fresh subscribers were found, and a new volume was issued each year. The story is the joyful conquest of form and principle by an author who was so seized with the absorbing interest of his work that he saw and admitted no difficulties. It should rank as a leading case in the historic conflict between author and publisher.

For one particular feature of the work the present generation has especial reason to thank Dr. HEGI. This is the almost numberless series of photographs of trees, shrubs, and flowering plants in their native haunts, showing the characteristic grouping of members of widely differing natural orders. It were indeed greatly to be desired that something of the same kind should be available in this country where, with the increase of population and the steady outgrowth of the garden village, many of the sights familiar to naturalists of an earlier generation are becoming lost. We may still have access in herbaria at Kew or elsewhere to dried specimens of our sometime rich flora, and the pages of SOWERBY, HOOKER, and BENTHAM will recall the individual features of plants which have become rare or extinct, but many of us would like to have some permanent record of the fritillary and wild tulip as they could be seen growing at one time in the Thames valley, of the fly and spider orchises along the crests of the chalk hills, and even of the blue rampion growing close up to the racecourse on Epsom Downs, not to forget the patch of Cornish heath that used to flourish in the middle of a common within a ten-mile radius of Charing Cross. There is hardly a page of HEGI's Flora which will not recall to someone a familiar scene of country life. The book should be accessible for reference in every museum and school library. No naturalist's shelf would be quite complete without it.

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[1] Illustrierte Flora von Mittel-Europa. By Dr. phil. Gustav Hegi, sometime professor in the University of Munich. Part VII. General Index. Munich: J. F. Lehmanns Verlag. 1931. Pp. 562. RM. 31. Price of the whole work in 13 volumes RM. 450. The 280 plates separately without text in a portfolio RM. 80.

ACCESSORIES TO ANÆSTHETICS.

THE laudable desire to rob the entry into unconsciousness of those fears and discomforts and excitements which so commonly accompanied the inhalation of anæsthetics in the past has led to the use of a number of drugs. Their very number suggests that no one of them answers all requirements. Nor is this supposition refuted, we gather, by the opinions of many of those best qualified to speak. For some years now it has been a common practice to precede the actual anæsthetic by a hypodermic injection. This usually consisted of a small dose of morphia with atropine. There were always, however, some, whose opinion demands respect, who were against even this simple preliminary. More emphatically did they object to the addition of scopolamine to the preliminary drugs, and they generally preferred to avoid even atropine alone. The logical basis of these objections was that these hypodermically injected drugs lowered the excretory activities of the body and interfered with due elimination of the anæsthetic, depressed respiratory activity, and increased the chance of abdominal distension after operation. The force of these contentions has to-day largely been dissipated by the use of gaseous anæsthetics in place of long administrations of ether and chloroform. Nevertheless it is obvious that the routine use of preliminary drugs is not an unmixed blessing and requires more care and consideration than is always bestowed upon it. This is even more certain with regard to the latest recruits to the great army of premedication agents than it is with regard to those which were widely employed hitherto. The rapid action, the freedom from unpleasantness, and the amnesia which accompany the use of sodium amytal and of nembutal must not blind us to certain undesirable symptoms often resulting from the use of these drugs. There is at the moment, it seems to us, an enthusiastic recommendation of the barbituric compounds for use before anæsthesia which too completely disregards the possible dangers inherent in that use.

Mention was made of these risks at the Anæsthetic Section of the Royal Society of Medicine reported in another column. Attention, too, was firmly directed to this side of the question by Sir WILLIAM WILLCOX at the Medical Society (THE LANCET, Feb. 14th, p. 354). It is perhaps particularly in association with the use of these drugs in midwifery that caution is needed. For at present there is afoot an intensive propaganda in favour of anæsthesia for all patients in labour, and there is some danger that an easily administered and potent drug may be pushed into indiscriminate use before we are sufficiently well acquainted with all the effects that it can produce. We are, of course, not for a moment suggesting that we disapprove of anæsthesia in labour generally speaking. On the contrary, we believe that it should always be available, to an extent that has not held in the past, whenever the medical man in charge finds it desirable. And this no doubt means in the vast majority of cases at some period or another. What we do wish to avoid is a premature impression that painless labour can be easily and safely secured in all cases by a dose of sodium amytal or of nembutal given in sufficient quantity early enough in labour. Experience hitherto, it seems to us, does not yet warrant that conclusion. Sometimes the results are all that could be wished. At others there is an amount of restlessness that would never be permitted with an ordinary anæsthetic. Both for midwifery and for surgery the latest barbiturates should be regarded, we feel sure, as still on their trial. We doubt whether the enthusiasm for them now exhibited in some quarters will be still prevalent in March, 1932.

THE OUT-PATIENT QUEUE.

THE least satisfactory feature about our hospitals is the out-patient departments. Instead of being centres for consultation on unusual or intractable cases, they have developed into places crowded with patients chronically ill whose supply of their favourite mixture has run out. This is not to imply either that the mixture is merely a placebo, or that the patient does not need periodical medical observation, but only that the out-patient department of a hospital is not the place to give it. The gain to all parties—hospitals, honorary staff, patients, and even students—from a drastic restriction of the numbers attending would be generally admitted, and only the mechanism by which it could be achieved requires discussion. Some reformers, whose views we outlined last week, would begin by restricting the clinics to those with a letter or at least a form signed by a family practitioner, a panel doctor, or the casualty officer of the hospital. This might lead to an outcry among subscribers to contributory schemes, but they could, we believe, be convinced that no hardship need ensue. The discretion of casualty officers, with the coöperation of hospital almoners, might be relied on to ensure that patients who have no practitioner to fall back on shall not be deprived of hospital treatment. In any case, as Dr. FRIEL points out elsewhere in this issue, it is only by restriction of numbers that hospitals can avoid the waste of time which is enjoyed only by the worst type of hospital "chronic." The appointment system has been tried with success at King George Hospital, Ilford. Here the arrangement of attendances by porters is entirely eliminated. The doctor—or the casualty officer—fills up a form asking that an appointment shall be made, and the patients are given times at intervals of half an hour in the medical out-patient department, 20 minutes in the gynæcological department, 10 minutes in the ear, nose and throat department, and so on. Members of the honorary staff are informed by telephone on the previous day of the number of appointments made on their behalf. This particular scheme implies such restriction in numbers as would not be practicable in a big town, but a system of booking in batches is proving successful at the Manchester Jewish Hospital, and is long overdue elsewhere. There can be no valid excuse for insisting on the personal attendance, for example, of 50 patients at 1.30 P.M. when the medical officers are not due until 2, and will not have got through their work till 5. Even without drastic revision of the present system it would surely be possible to number the seats in the department and to issue half-hourly time cards, allowing for a reasonable wastage. At present the custom of seeing first those patients who hold in their hands a personal letter from a doctor leads to the abuse of such passports to early attention. Experienced wanglers often demand letters, frankly as time-savers, from medical men who have never attended them professionally. Hospital authorities are perhaps unaware how bitterly they are criticised for the lack of consideration shown to out-patients, and how much opposition has to be overcome before a conscientious employee or housewife is persuaded to attend a hospital out-patient department.

ANNOTATIONS

INTERNATIONAL QUARANTINE.

FROM the Permanent Committee of the Office International d'Hygiène Publique we have received a summary of the proceedings at the last session, which was held in Paris in October, 1930. The summary shows the wide range of subjects dealt with as well as the practical nature of the questions which come up for consideration. Among these some of the most important are reported upon under the common heading of "Ships Doctors," and have reference to the prevention of the spread of disease by sea-routes, and to the need of an adequate standard of medical service on board ship by which early diagnosis and intelligent treatment can be secured. Proposals are still under consideration for the abolition of bills of health, a measure which is in accordance with the recommendations of Article 49 of the International Sanitary Convention, and an agreement for this purpose will probably be shortly concluded between several countries, at any rate in relation to their European ports. There will be differences of opinion as to the policy here of the International body, so that the confining of the change to European ports may be politic. For many people the bill of health is the most important of the documents carried by a sea-going vessel, an aspect of the matter that is fully set out in a memorandum from Dr. Gilbert Brooke, now the Chief Medical Officer of Sarawak, which will be found on page 606 of our present issue.

An interesting expression of opinion comes from the Permanent Committee on notification of cessation of infection in an area previously affected. Unless a country has sent the proper notification, other countries are not obliged to cease the application to that country of the provisions indicated in the Convention; on the other hand, such a notification is only possible and admissible with regard to an area in which the disease in question is not normally present from year to year. In any case notification should not be made, even under the terms of Article 12 of the International Sanitary Convention of 1926, unless the country concerned is honestly convinced that arrivals from its territory are no longer dangerous. This conviction should obviously not be based on theoretical data but on all available information showing the actual condition of the locality. This seems a very sensible procedure, under which the absence of plague for a period from a country would not warrant any security, unless investigations with reference to rats had been carried out for a reasonable period. Observations by sanitary maritime authorities and ship-owners are referred to in the Bulletin as showing that the system of international sanitary administration indicated in Article 28 of the Convention (periodical deratisation of ships) has been justified by results, one proof adduced being the increasing number of certificates of exemption issued by Great Britain during the first three quarters of the year. There is no doubt that the system must be applied in a reasonable manner, without losing sight of the fact that it concerns not *only* ships infected with, or suspected of, plague, but *all* ships, and that it is not intended to suppress a present danger, but as a measure of general precaution to reduce the possibility of such a danger. The Committee, by making a special study of such questions, and by insistence, as far as possible, on a uniform model of certificates, is advancing the methods of international quarantine.

TISSUE REPAIR AND BODILY REACTION.

THE influence of the "soil" upon the processes of inflammation and repair is so important that in this direction we may hope for perhaps the greatest advances in the prevention and cure of infective diseases. In inflammation the reactions of the host to the infecting organism are at least as important as the virulence of the organism. Efforts to modify the milieu in which an infecting organism gains a foothold or in which disease develops are as much the basis of treatment as are efforts to destroy the infecting agents (when these exist and are known). Among the least understood of the factors which make a person relatively liable to certain disorders are the constitutional tendencies called diatheses. Modern medicine tends more and more to emphasise the importance of the constitutional factor and possibly we may one day be able to detect subtle changes, chemical or physical, in the blood or tissues of patients, which may be an expression of their diathesis. A posthumous monograph[1] by Prof. Rudolf Balint, of Budapest (with Stefan Weiss), containing the results of his researches upon the growth of tissues and the acid-base equilibrium, leads to speculation on the influence of blood and tissue acidity upon vital processes. At the site of inflammation there is a local "acidosis" due to the tissue breakdown and associated with local vaso-dilatation, raised osmotic pressure, increased heat, and the other changes of acute inflammation. The reparative phase, however, according to Balint's theory, takes place more rapidly and completely in an alkaline medium. In spite of much evidence indicating that the acid reaction may itself be the stimulus to new tissue formation, Balint and Weiss bring forward experiments to show that in fact repair is more satisfactory in alkaline surroundings. This theory arose from the work of Balint who suggested that peptic ulceration is associated with an acid reaction of the patient as a whole, constitutionally. He brought forward evidence that the poor healing power of ulcer patients was associated with abnormal acidity of their blood and tissues. Although the changes of pH that Balint recorded were very small, and this work has been seriously criticised, he suggests that small variations are capable of a profound influence over the proliferative processes of tissue repair. In the present monograph numerous experiments are described which the authors consider point to the conclusion that an acid reaction checks, while an alkaline stimulates, "all types of tissue proliferation"; such changes of reaction as may occur in life they consider active in this respect. The observations cover experimental tuberculosis in animals, growth of carcinoma cells, calcification of bone, "sterile inflammations," growth of tissues in culture, and other similar tissue formations. Much of the work must impress the reader (though not all will do so equally), and the subject is of such great importance and promise that all will regret the loss to medicine by Prof. Balint's death.

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[1] Gewebsproliferation und Säurebasengleichgewicht. By R. Balint und S. Weiss. Berlin: Julius Springer. 1930. Pathologie und Klinik in Einzeldarstellungen.

THE MEDICAL AND DENTAL REGISTERS.

A COMPARISON of the Medical Register dated 1931 with that dated 1930 suggests an uneventful year. The number of names on the register increased by 421 compared with an increment of 534 in the preceding year, and an average of 1094 in the preceding decade; the smallness of the figure is partly due to a rather large number of deaths and a vigilant purging of the list. During the year 1490 names were added by registration—768 in England, 350 in Scotland, 165 in Ireland, 191 in the Colonial and 17 in the Foreign list; 36 names were restored to the register; 1105 names were removed—887 on evidence of death, 214 whose address could not be ascertained, and 4 after disciplinary action. The total number of names is 55,291, of whom 48 per cent. were originally registered in England, 31 in Scotland, and 14 in Ireland, leaving 6 per cent. for the Colonial list. There is no change in the table showing the degrees registrable in this list, except an asterisk to the heading India, stating that degrees of all Indian Universities granted subsequent to Feb. 24th, 1930, are not registrable. All the 17 names added to the Foreign list are those of Italian medical graduates who qualified at nine different universities in the years given in parentheses—viz., Bologna (1928), Genoa (1922, 26, 26, 28, 28), Messina (1926), Milan (1928), Modena (1925, 26), Naples (1927, 27), Padua (1923, 27), Palermo (1924), Parma (1904, 18). There were 1792 medical students registered in 1930, being 290 more than in 1929, and a higher figure than any since 1922. The Dentists Register, which reaches us at the same time, contains 14,422 names, being an increase of 41 on the previous year's total. There were 280 new names on the British list—of which 253 were registered with qualifications—2 on the Colonial, and 1 on the Foreign list; 146 names were removed on evidence of death. The discrepancy is chiefly due to the adjustment between names restored and removed on technical grounds. It is noteworthy that the total number of those practising dentistry has scarcely altered during the last five years. There were 306 dental students registered in 1930, being 8 more than in 1929, and (as is the case with medical students) a higher figure than any since 1922, but obviously an entry inadequate to make good the wastage.

ERYTHEMA NODOSUM AND TUBERCULOSIS.

THE two latest studies of erythema nodosum lead their authors to discordant conclusions. Dr. Axel Cedercreutz[1] has inquired into the fate of the patients in his private and hospital practice who before 1910 had suffered from erythema nodosum or erythema exudativum multiforme. Twenty-six of the 63 patients suffering from erythema nodosum were traced, and nine were found to have died; but only two of the deaths were due to pulmonary tuberculosis. It should be noted incidentally that the subsequent death-rate from pulmonary tuberculosis among the 78 cases of erythema exudativum multiforme was also low (five out of 36 patients traced). Very different are the conclusions to which Dr. H. d'U. A. Engelsgaard[2] comes in an investigation of the patients admitted to the Lyster public sanatorium in Norway from 1914 to 1929, who gave a history of erythema nodosum, diagnosed as such by a medical practitioner. There were 155 such patients, of whom as many as 124 were women. In 82 cases (53 per cent.) there was a history of tuberculosis in some other member of the family; and in most of these cases erythema nodosum appeared at a time when this other member of the family had either just died of tuberculosis or was invalided by it. What was even more significant was the brevity of the interval in many cases between the appearance of the erythema nodosum and of the first signs indicative of tuberculosis. In as many as 55 cases this interval was less than three months, and in 75 cases, or nearly half the total, it was less than a year. Had pleurisy been accepted as a sign of pulmonary tuberculosis, an even closer time relationship would have been established between the erythema nodosum and the first signs of tuberculosis.

PROVINCIAL HOSPITALS AND PATHOLOGICAL RESEARCH.

A FORTNIGHT ago Lord Dawson formally opened a new pathological block that has been added to the Sunderland Royal Infirmary. The cost has been £7000—not an extravagant sum for a completely equipped department which necessarily undertakes work of great variety, complexity, and scientific delicacy. Sunderland by no means stands alone among provincial hospitals in the possession of similar facilities for research, but there is still wide scope and urgent need for their extension, and the authorities of the hospital well deserved the praise Lord Dawson gave them for their courage in spending money in this way at a time when their area is suffering severely from industrial depression. He laid stress upon the rapidly growing importance of the scientific side of hospital work—an importance as yet very imperfectly appreciated by the general public—and spoke a courageous word about that prejudice against post-mortems which only too often stands in the way of the complete investigation of disease. While emphasising the absolute necessity, in the changed conditions of hospital service, of careful coördination between the local authorities and the voluntary institutions, Lord Dawson uttered a useful word of warning. Coördination is, no doubt, a blessed word, but it must be practised by the right people in the right way, and the authority responsible for the smooth and effective running of the new system must comprise "people with the necessary skilled knowledge" that "flexibility and promptness in administration" may be assured. Regional hospital service, if the most and best is to be made of it, will involve the pooling of scientific knowledge and the results of specialised research to an extent to which many of the provincial hospitals are as yet unaccustomed. The number of medical schools must always be comparatively restricted, but every hospital of any importance will be compelled in the near future to be, within limits, a centre of investigation in all that is comprised in the word pathology. Not otherwise can they hope to deal knowledgeably with the vast increase of difficult and specialised work which the changed conditions of the time are forcing upon them.

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[1] Finska läkaresällsk. handl., January, 1931.

[2] Tidssk. for den Norske laegeforening, Dec. 1st, 1930.

DIPHTHERIA IN BERLIN.

THE extraordinarily severe epidemic of diphtheria which has recently occurred in Berlin and the high case mortality in spite of large doses of antitoxin given at an early stage of the disease led to an animated debate last month[1] at the Berlin Medical Society on the efficacy of diphtheria antitoxin and active immunisation, in which Profs. Friedberger, Königsberger, Friedemann, Jürgens, and von Drigalski, among others, took part. Friedberger maintained that the remarkably favourable results that followed the introduction of antitoxin in the 'nineties of last century were really due to a natural decline in the severity of the disease. As the result of a study of a large series of European and American statistics he had come to the conclusion that the diphtheria curve had been in no way affected by the introduction of antitoxin. He therefore suggested that a greater use than hitherto should be made of non-specific therapy, as in the case of gonorrhœa, syphilis, and a number of other diseases whose causal organisms were well known. As regards active immunisation against diphtheria, Friedberger was also convinced that its introduction had not caused any change in the occurrence of epidemics, and that all the statistics as to its success, which mainly emanated from American sources, were based on the erroneous conclusion that the decline in the incidence of diphtheria was due to immunisation, whereas the immunisation was being carried out when the disease was already showing a tendency to abate. Königsberger, while admitting the excellent results obtained by Bie at Copenhagen from the use of very large doses of antitoxin—e.g., 100,000–120,000 units intravenously and 500,000–800,000 intramuscularly—was not convinced that such high doses were entirely responsible for the good results. Friedemann, who had also had an opportunity of observing the Danish cases, urged that only carbolic-free antitoxin should be used as in Denmark for intravenous injection. He had invariably found that the malignant cases showed a serous meningitis and that after lumbar puncture there was always a decline in the cerebral symptoms, though he would not go so far as to say that lumbar puncture lowered the fatality-rate. Jürgens emphasised the importance of early administration of antitoxin and of not delaying this treatment until a bacteriological report had been received. As regards the value of immunisation he drew attention to the fact that antitoxin had never been found in the blood of diphtheria convalescents or in cases of diphtheria after death. There was therefore, in his opinion, no certain proof of the value of immunisation against diphtheria. On the strength of his observations during a recent visit to America von Drigalski declared that American statistics concerning immunisation were not so untrustworthy as Friedberger had maintained. Moreover, a comparison of the diphtheria morbidity in Berlin among the immunised and non-immunised had convinced him that a large number of children had been completely protected and that at least 40 children's lives had been saved.

OPERATIVE TREATMENT OF PILES.

A MODIFIED clamp-and-cautery operation described by D. Warshaw[1] resembles the classical operation except that the coagulation is carried out by diathermy, a monopolar current being recommended. Evidently Warshaw does not hesitate to include external piles in the clamp as well as internal, and this is a departure from the usual practice, for with the ordinary clamp-and-cautery method there is usually much pain and external œdema if skin is included and cauterised. He does not seem to be concerned about this, however, and in a series of 200 cases he has had good results. The routine of preparation is very simple; a cathartic is given on the night before operation and a sodium bicarbonate enema two hours before operation if there is chronic constipation. The patient is kept in bed for only two days and is usually able to return to work on the fourth day. This seems rapid work, for the average period of hospitalisation in this country after hæmorrhoidectomy is 12 days. Warshaw advocates operation under sacral anæsthesia, but the general experience of this is that it is unreliable, with probably 20 per cent. of failures. The objections that might be advanced against his method are that it takes a long time (15 to 30 minutes) and that there is a risk of the diathermy burn extending into the tissues deep to the clamp. On the other hand the rapid convalescence should be a great gain to the patient.

W. L. Secor[2] commends the modified excision-and-suture operation. His disapproval of the injection method is somewhat surprising, for it is now being used in most rectal clinics, and the injection of phenol in oil is widely practised and found effective. Every rectal surgeon will agree with him, however, that radical operation should be advised when, as a result of thrombosis, internal piles have become transformed into fibrous piles or polypi. The method he advocates is a modification of the excision and suture operation commonly known as Earle's. He recommends a special fenestrated clamp which makes it possible to crush the hæmorrhoid proximally to the suture line, and in this respect it should be an improvement on the simple forceps of the Spencer Wells type which is generally used. It is doubtful if Secor's idea of this clamp sealing the veins and making ascending infection impossible is accurate, but in any case the danger of transfixion of a vein with ascending infection and portal pyæmia, on which he lays much stress, is extremely remote. The method of excision and suture has never been popular in this country, the feeling being that a simple method, such as the ligature operation, is preferable to any which involves elaborate suturing.

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[1] Medizinische We[illegible]eb. 14th, p. 241.

[1] Amer. Jour. Surg., 1931, xi., 45.

[2] Ibid., 1930, x., 344.

The methods of both Warshaw and Secor, if properly carried out, are efficient in practice and might well be tried by surgeons who, although well satisfied with their usual operation, have no objection to testing an alternative method. It is very clear that this branch of surgery demands much care and attention to detail in the preparation and after-treatment, as well as at operation itself.

CENTENARY OF THE BRITISH MEDICAL ASSOCIATION.

ARRANGEMENTS are now being made to celebrate the hundredth anniversary of the British Medical Association at its annual meeting in London next year. Lord Dawson has accepted the presidency and a large attendance of members and guests from overseas is expected. Outstanding events of the meeting will be a pilgrimage to Worcester, where the Association was founded, and the unveiling of a memorial to Sir Charles Hastings on July 24th. The president will give his address in the Queen's Hall on the 26th, and this will be followed by a reception in the Albert Hall, where there will be accommodation for 5000 or 6000. The centenary dinner will be in the same place, and arrangements are being made for 2000 diners. The scientific sections are meeting in the South Kensington buildings of the University of London from July 27th to 29th, and it is hoped that the contributors will be widely representative of medicine at home and abroad. The honorary organising secretaries of the centenary meeting are Dr. E. A. Worley and Dr. H. Gardiner-Hill.

This year the annual meeting of the Association is to be at Eastbourne under the presidency of Dr. W. G. Willoughby, the medical officer of health. The sections meet from July 22nd to 24th.

VITAL STATISTICS IN THE TROPICS.

IT is no exaggeration to say that the vital statistics available from many of our tropical dependencies are valueless as such. The difficulties of administration in large native territories, the absence of encouragement on the part of central authorities, the lack of interest on the part of medical officers, are all probably contributing factors. Yet in civilised countries vital statistical records are recognised as essential adjuncts of public health work as evidence both of the success of such work and the directions in which further preventive measures are required. Their value in the tropics can, at the least, be no less. That such records of considerable accuracy and value could, and should, by degrees be obtained was very ably argued by Major Granville Edge in a paper on the Scope and Uses of Vital Records in the Tropics, read on March 5th before a joint meeting of the Sections of Epidemiology and Tropical Medicine of the Royal Society of Medicine.

It is a case in which the best may be the enemy of the good. It is obviously impossible to transplant immediately to the tropics the highly intricate systems of recording vital statistics that have slowly developed in cooler and more civilised countries. But this must not be used as an argument against the adoption of less intricate means. Major Edge puts forward the suggestion that, as a beginning, small scale inquiries should be persistently and regularly made, strictly limited in their scope and confined, perhaps, at first to particular tribes, villages, or even to selected families. Within these limitations he believes it would be possible to obtain accurate population figures by sex and civil state, and approximate ages, births and infant mortality-rates, death-rates and their causal and seasonal variations. By such means, too, the native peoples would become familiar with the details such inquiries entail, the frequent visits of officials come to be regarded as matters of mere routine, and any suspicions aroused during the early stages would gradually disappear. It would be only a matter of time before the area and scope could be extended. The investigation must be made by a worker completely versed in the habits and belief of the natives or, as one of the contributors to the discussion graphically said, "one false move on the part of the medical officer and his demographic unit will disappear into the bush." But to say that any such inquiry is impossible is merely to invite Major Edge's retort that it *has been done*—by the Dutch. In such publications as the Proceedings (Tropical Section) of the Koninklijke Vereeniging Koloniaal Instituut Amsterdam, the *Geneeskundig Tijdschrift voor Nederlandsch-Indie*, and the *Mededeelingen* of the Pathological Laboratory of Medan (Sumatra) there is to be found a wide range of epidemiological studies discussing a variety of health problems peculiar to the tropics, and presenting in great detail data relating to the mortality and morbidity of both European and native people. It is difficult to believe that the difficulties in tropical countries are any greater than were the difficulties with which workers in Europe had to contend 200 years ago. Yet, as Prof. Major Greenwood suggested in the discussion, John Graunt, a London linen-draper, living 280 years ago, discovered by admittedly *crude* methods a very great deal about the causes of death, perhaps more than any medical officer of health in the tropics has yet done. Gross errors were made then and gross errors will be made in the tropics, but unless some such small sampling inquiries are attempted, and interest is taken in them by superior officers, no progress will ever be achieved. It was Prof. W. W. Jameson's view that more interest will be taken in such work in the future; that up till now there has been no tradition in the colonies, such as exists in this country, for the medical officer of health to concern himself in matters of vital registration; that this, in process of time, will change. At present, as Major Edge pointed out, in the absence of reliable statistics, the effects of civilising influences upon native health must remain largely conjectural.

EXEMPTED HEROIN PREPARATIONS.

WHEN the Geneva Convention was ratified in 1928 the section of the Dangerous Drugs Act, 1923, which gave power to add all preparations of diamorphine to Part III of the Act of 1920, came into operation. The Pharmaceutical Society of Great Britain however approached the Home Office with a request that certain preparations should be exempt from the Act. We have received from the Home Office a copy of an Order—The Dangerous Drugs (Consolidated) Amendment Regulations, 1931—from which it is seen that this request has now been granted. The delay was due to the fact that it was necessary for the application to be approved in succession by a Committee in Paris, passed on to the Opium Advisory Committee, and the Council of the League of Nations. This process having been completed, and confirmation obtained from the League, the Home Office was duly authorised to promulgate the Order. In anticipation of the publication of the new regulations, and by arrangement with the Home Office, the formulæ of the five exempted preparations have been published as a supplement to the British Pharmaceutical Codex. The preparations are as follows:—

1. Elixir diamorphinae et terpini cum apomorphina.
2. Linctus diamorphinae camphoratus.
3. Linctus diamorphinae cum ipecacuanha.
4. Linctus diamorphinae et scillae.
5. Linctus diamorphinae et thymi.

In the case of each formula the proportion of diamorphine hydrochloride is grs. 4 to 20 fluid oz. of the preparation, or 0·046 per cent. In the first and last of the two formulæ there is also grs. 5 of apomorphine hydrocholoride to 20 oz. of the preparation, or 0·057 per cent. The maximum dose in each case is a fluid drachm, and thus the amount of diamorphine hydrochloride in a maximum dose is one-fortieth of a grain. It may be added that these preparations are free from the restrictions which apply to all other preparations of heroin.

MACLOGHLIN SCHOLARSHIPS FOR MEDICAL STUDENTS.

By the will of Mrs. Eliza Macloghlin, who died in May, 1928, money was left to the Royal College of Surgeons of England for the endowment of scholarships in memory of her husband, the late Dr. E. P. P. Macloghlin, formerly in practice at Wigan. One scholarship, of about £100 per annum and tenable for five years, is to be awarded annually in July, to a male student between 16 and 22 years of age, whose means would otherwise be insufficient to cover the cost of medical education. In 1930, at the first competition for these scholarships, there were five candidates, and it is stated that for the next award forms of petition, appropriately filled up, must reach the secretary of the College not later than June 1st. They must be accompanied by a certificate of having passed a preliminary examination in general education recognised by the Conjoint Examining Board for admission to its pre-medical examination. Candidates for the scholarship will be required to sit for Part I. of this examination (chemistry and physics) on June 30th, and the scholarship will be awarded to the successful candidate obtaining most marks. Further information may be had from the secretary of the College, Lincoln's Inn Fields, London, W.C. 2.

SECONDARY EFFECTS OF REPEATED ENEMATA.

Enemas have been used for centuries in the treatment of constipation and affections of the bowel. Two results have been sought from their use. It is sometimes required to stimulate the bowel wall to contract forcibly and so expel the hardened contents, as in the clearing enema. This depends for its action on the introduction of slightly irritating substances under pressure so that the bowel contracts because of its resistance and elasticity and because of its response to chemical stimulation. In other cases the object is to soothe the lining membrane by washing away mucus and irritating debris. With this in view bland solutions are injected slowly and under low pressure, so that the fluid may percolate by gravity into the higher portions of the colon. This form of treatment is usually distinguished as intestinal douching, or Plombières treatment.

The repeated use of enemas, if long enough continued, may possibly produce distension and consequent weakness of the muscle of the intestinal wall and irritation of the sphincter, so that a vicious circle develops and the bowel can only be evacuated by continuing the enema habit. More immediate, however, is the possibility of irritation of the mucous membrane leading to inflammatory changes. J. Friedenwald and M. Feldman [1] have studied the latter effect by giving daily enemas to dogs. Various material were injected, and in some experiments much inflammation and even ulceration of the mucous membran was noted. After long periods of daily injection o enemas of plain water, soap-suds, or cotton-seed oi little effect was observed in the mucous membran except small areas of congestion. Proctitis, however and ulceration of the colon have been seen in ma after soap-sud enemata. Weak solutions of acriflavin and camphor water have no apparent local effect o the bowel, but irrigation with irritating chemical such as sodium carbonate, ammonium chloride, an hydrochloric acid, even in weak solution, caus inflammatory changes ranging from mild hyperæmi to extensive ulceration and necrosis. Friedenwal and Feldman therefore offer a warning against th indiscriminate employment of enemas and the use irritating ingredients. The object of this form treatment should be to re-educate the normal habi of evacuation and to allay inflammation of the colo and rectum.

THE ELUSIVE ETHER.

A remarkable correspondence in recent issues *Nature* seems to have sounded the knell of the reali and substantiality of the luminiferous ether whic was, in Kelvin's words, "the one thing we are su of in dynamics." Far from being a fantastic creati of the speculative philosopher, it was set before t British Association meeting at Winnipeg in 1909 something as essential to us as the air we breath But two years ago Sir Arthur Eddington told that among the leading scientists of to-day abo one-half assert that the ether exists and the oth half deny its existence. As a matter of fact, added, both parties mean exactly the same thing they are divided only by words. Prof. Muirhea remarks in his letter to *Nature* that before the can be any talk of existence you must define th world within which the existence of anything affirmed—what logicians call the universe of di course. And in a final letter Sir James Jeans deal with the conception of ether in three differe universes: first, the universe of the astronomic observatory and the physical laboratory which continuous with the world of the felt waking body secondly, the *mathematical* universe of discour which deals only with such phenomena as can reduced to pointer readings; and thirdly, th world of values. In brief, Jeans contends that the physical world the ether is *non-existent*, in th mathematical world it comes into being at the be and call of the mathematician, in the world of valu it is meaningless.

The Harveian lecture of the Harveian Society London will be given by Sir Percy Sargent 11, Chandos-street, W., at 8.30 P.M. next Thursda March 19th. His subject will be the Romance the Pituitary Gland, and the meeting will be open members of the medical profession.

The Secretary of State for Scotland has appoint Mr. D. P. D. Wilkie, Professor of Surgery in t University of Edinburgh, to be a member of t Scientific Advisory Committee on Medical Admini tration and Investigation.

We regret to learn the death of Prof. Davi Hepburn, Emeritus Professor of Anatomy at Universit College, Cardiff, and for five years a member of th General Medical Council.

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[1] Amer. Jour. Surg., 1931, n.s., xi., 23.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

X.—GUILT AND INFERIORITY.

B.—Inferiority.

THE CAUSES OF INFERIORITY.

The causes of inferiority feeling are also extremely important, and may be classified more fully than has been attempted in the case of fear and guilt:—

1. Hereditary. 2. Acquired: (*a*) Infantile, (*b*) circumstantial, (*c*) organic; (1) conscious, (2) unconscious.

HEREDITARY CAUSES.

It is perhaps unnecessary again to stress the hereditary factor as being responsible in the first place for the feeling of inferiority. For example, it was pointed out in Lecture VIII. that women in general are liable to be born with a tendency towards inferiority feeling, owing to the repetitive and summative effects of past racial experience upon their sex. Inferiority feeling, however, is common enough in both sexes, as an inborn tendency, for reasons partly associated with imago reactions and partly due to the causes set out below.

ACQUIRED CAUSES.

(*a*) *Infantile.*—The crude way in which the unconscious, or primitive feeling side of life, measures its experience has already been mentioned. The infant is born, small and weak, into a world which is relatively large and strong, and the first feeling pattern which is stamped upon its impressionable senses is one of *relative inferiority*. This primary inferiority is something which should be grown out of, but, being the first impression at a most impressionable age, it is by no means an easy matter to do so. Inferiority is unconsciously measured in terms of years, stature, and strength, and it is many years before these have grown to such a degree as to give the individual a feeling of relative adequacy. The tendency, therefore, is for the first impression of inferiority to remain to a large extent unmodified in after life, even though the passage of years has removed the original cause.

(*b*) *Circumstantial.*—It is by no means easy, however, to get rid of the feeling of inferiority, owing to the ready-made tendency to overcome it by means of "projection." The mechanism of projection is protective of the inferiority feeling, and works by way of destructive criticism, the purpose of which, by pointing out the inferiority of the other person, is to raise our own relative importance. By criticising someone else we can prove to ourselves that person's inferiority and thereby our own relative superiority. This is the cause of nearly all destructive criticism and this is the reason why constructive and disinterested criticism is so rare. Even fathers have their own inferiority problems, and tend to assume a moral and domestic stature that exercises its superiority by daily demonstrations of the inferiority of junior members of the family.

Schoolmasters are very far from being free from inferiority feeling and its resultant projection mechanisms. They are placed in a position of authority which they are liable to make use of unconsciously and very easily, for there are many causes for criticism, sarcasm, and mirth, at the expense of those whom it is their privilege to educate. Both with regard to work and morals, the schoolmaster is liable to assume an undue standard of superiority while he tries to drive knowledge which they do not wish to learn into the heads of unwilling recipients. Any failure to profit by this teaching, however, is an opportunity for a further demonstration of the pupil's inferiority.

It is particularly in the moral sphere that ministers of the church are inclined to add to feelings of inferiority. The assumption of a standard of perfection is not an encouragement to those who have not yet reached such sinless heights. It tends to add to the measure of relative inferiority, and also to the height of the obstacle which it is necessary for us all to overcome.

Thus on all sides inferiority is forced upon us, because of the protection which destructive criticism affords to the inferiority feelings of others. A vicious circle is set up, in which inferiority exaggerates inferiority and maintains it long after it should have been forgotten.

It is worth while explaining the *psychology of criticism* to the large number of patients who suffer from over-sensitiveness on this point. They quite wrongly let the critic assume father imago's shoes, and tend to accept destructive criticism as if it were a sign of their own inferiority and of the superiority of the critic. When it is explained to them that the critic is being so destructive only because of his own inferiority feeling, it is easy to see that we are rather complimented than otherwise when we are criticised, because it is a sign that the critic has a feeling of inferiority. If the criticism is not destructive, so much the better, but this is unfortunately rare, as there is nothing so useful as constructive criticism.

Many of us, thinking back in our minds to our childhood days, can remember the feelings which were roused by being laughed at on some occasion when we made a mistake which was very ridiculous in the eyes of grown-ups, but which seemed very reasonable to ourselves. If this kind of ridicule is often repeated it may give rise in a sensitive nature to a life-long feeling of inferiority. It is all part of the tendency of grown-ups to adopt an air of superiority towards children, but it is merely another example of their own need for a protective mechanism.

There are many interesting specific causes for the development of a feeling of inferiority. For example, a girl, the youngest of four children with three brothers, is doubly in a position of relative inferiority, firstly because she is the youngest member of the family and therefore in competition with those older than herself, and secondly, unless very wisely handled, she is likely to feel that her sex is a handicap which deprives her of the privileges afforded to her elder brothers. Such a child is liable to grow up unable to tolerate criticism or any feeling of inferiority, who cannot bear to be left out of anything, and who must always be in a position of importance. This attitude is only a protective one, but it is likely to dominate her whole life afterwards, at the expense of the development of her individual character and the privileges associated with her own sex.

Character is formed by such extraneous influences as *position in the family* to a much larger extent than is generally realised. In this respect the youngest child occupies a peculiar position with regard to the older members of the family. Such a child is in a position of inferiority, but is likely to experience certain privileges as the "Benjamin," receiving both the special encouragement of his parents and the protective aid of over-compensation, both of which may act as spurs to his own ambition. It is, perhaps, for this reason that it is the youngest child in the fairy story who is so often singled out for the special reward of the hand of the beautiful princess and half her father's kingdom.

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* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Earlier lectures of the series have appeared weekly in THE LANCET since Jan. 3rd. The first part of Lecture X. appeared last week.

The number of children, sex distribution, age intervals, and the position in the family are all important determinants of "acquired" character, which, through the resultant differences of individual experience and environment, leave their indelible mark. We learn by experience, although not usually consciously, and having learnt wrongly, it is sometimes very difficult indeed to lose what we have learnt, and find our own true selves beneath.

It is a matter of common knowledge that good and successful fathers are often disappointed in their children. This applies both to moral and commercial success. The "good" father may assume a standard of such impossible perfection in the eyes of his children that he may cause in them an intense feeling of inferiority and may thereby act quite unwittingly as a handicap and deterrent to their development. This probably accounts for the fact that the sons of clergymen are sometimes so different in mind and character from their fathers. Any factor which induces a feeling of inferiority will have a harmful effect on individual development, and the goodness, greatness, or success of the father often weighs like a millstone round the neck of the son.

Another factor of a similar kind is found where one of two brothers is successful, to whom the prizes of life come easily, whereas the other, not possessed of the same brains or aptitude, is relatively a failure. If at the same time this invidious distinction is made still more apparent by the remarks of parents and teachers, the inferiority of the less fortunate one is likely to be still further exaggerated, with all its deterrent effects. Many a life has been spoilt through constant invidious comparison in earlier years, in spite of the fact that the one who was supposed to be superior may have shown an early promise that eventually lacked fruit.

ORGANIC INFERIORITY.

(1) *Conscious.*—The most familiar example of conscious organic inferiority is that associated with the psychology of those whose stature is below the average in height. (For a man to marry a woman six inches taller than himself shows the measure of his unconscious over-compensation of his own stature.) Other causes of organic inferiority may be an early infantile paralysis, with the deprivation of full use of an arm or leg, or the possession of a squint which marks a child out for notice as different from and inferior to his fellows. A comparative smallness of the penis may perhaps be noticed in a public swimming bath, and may cause intense feelings of inferiority, of far greater importance than we realise because associated with that function which has such primary biological value.

(2) *Unconscious.—These factors are also of great importance, particularly because they are most liable to be entirely neglected as to their psychological significance.* A common example occurs in those cases in which there is some gonad deficiency, possibly associated with cryptorchism. The resultant feeling of inferiority will not consciously be referred to its cause, but will be felt nevertheless, and consciously rationalised and probably overcompensated. In women ovarian deficiency may have a similar effect on consciousness, and may produce a feeling of relative inferiority which may be still more exaggerated by such an outward sign as hypertrichosis. The whole feeling of inferiority may then be transferred to the hypertrichosis as a rationalised cause. A trichophobia is therefore not by any means to be regarded entirely as a psychological problem, because the underlying physiological deficiency is a still deeper causative factor. The work of Mott, who discovered evidence of physiological gonad deficiency in cases of dementia præcox, becomes doubly interesting when we consider these problems of psychology and behaviour as manifestations of an unconscious inferiority feeling and its associated defence mechanisms, which will be discussed later.

Another example of the same unconscious physiological deficiency is found in many patients who have a low blood pressure. This again tends to cause feelings of inadequacy and to develop psychological symptoms. Quite apart from the effects of toxæmia which may result from chronic constipation, there is probably an additional factor of psychological inadequacy due to not feeling "up to the mark." All these cases of inferiority become doubly important when considered in the light of the unconscious tendency to correct them by over-compensation.

DEFENCE MECHANISMS.

The common unconscious defence mechanisms for a feeling of inferiority are: over-compensation, projection, identification, the wish to be inferior.

Over-compensation.—Unless this mechanism is recognised for what it really is, we are in danger of being very much out in our reckonings. *It is a sign of weakness, not of strength*—and it will surely be recognised that there is a great deal of difference between the two. Over-compensation is a masquerade of strength, and not a real one, and is therefore allied with phantasy. The heart with a valvular lesion is thereby in a state of relative inferiority to the task which is imposed upon it, and it will tend to react by muscular hypertrophy, or over-compensation, but this is a sign of its weakness, not strength. Both in body and in mind the principle of over-compensation is to be found and needs to be recognised if too great a strain is not to be imposed on the organism. It is a mechanism of unquestioned biological utility, but i can only be allowed a limited usefulness, which i is very liable to over-run with disastrous results. I practice it is sometimes liable to be as dangerous a it would be to declare our weakest suit as trumps a bridge, or to attempt to sprint when we felt hardl able to stagger.

One of the commonest forms of inferiority over compensation is *conceit*, the assumption of a "1½" standard in place of the feeling of being "½." Th conceited person is typically shy, and the reason wh he finds it so difficult sometimes to realise that he i conceited is because his own basic feelings abou himself are so intensely inferior. The *snob* is anothe example of over-compensation, who aims at the to rung of the social ladder because he or she feels sur that their right place is too far below the middl These are the people who cannot tolerate the slightes criticism with regard to their social status. The must always be at the top, where they can enjoy th destructive criticism of pushing other people down All kinds of *pomposity*, which is so frequently asso ciated with shortness of stature, are also over compensations for inferiority, the general defensiv tendency being to put everything in the shop window in order to disguise the deficiency within.

A boy, aged 15, at a public school told his house master that he was terribly anxious about masturbation, and the house master told his mother that it was due to the fact that the boy was oversexed and he needed careful watching. As a matter of fact, the boy was extremely shy, very much of the schizophrenic type, and showed every sign of a gonad deficiency. *He was not oversexed but undersexed,* and his compulsive masturbation was over-compensating for his feeling of sexual inferiority. He was trying to prove to himself by his compulsive masturbation that he was what he felt afraid he was not and also what he was afraid to be—a man.

Similarly, there are many cases of adult immorality which are due to the same over-compensatory mechanism. A patient, aged 22, who came to hospital complaining of sexual impotence, said that he was worried about it because he wished to get married. He stated that he had been in the habit of having intercourse with different girls nearly every night for a year. The first superficial explanation of his trouble might be perhaps that he had been spending too much of his vitality in riotous living. We should not need to learn, however, that things are not always what at first they seem to be. His motive had not been from a plus sign but from a minus, and he had wished to prove to himself that he could do that which he feared he could not. The trouble with such cases is that they are not prepared to do what they can, but are trying to do more than the normal man is content to do. If they can be made content to expect the " 1 " standard and to give up the " 1¾," they can probably be something considerably better than a " ½."

It should not be news to us to learn that the man who is most given to boasting about his sexual adventures, or to relating stories of a sexual interest, is not the one who is most sexually potent. Nor is it necessarily true that the ability to consort with prostitutes or keep a mistress is a sign of sexual superiority. Many men do both those things from an unconscious motive of sexual inferiority, and for the same reason are most likely to talk about themselves and their affairs.

It is very easy to see how over-compensation may lead to *phantasy,* because they are both derived from a fear of reality, and there are no limits to the achievements which phantasy may provide. It is the happiest of all hunting-grounds for inferiority compensation—as long as it does not have to come up against reality. That is where the trouble becomes serious, and the tendency is then to make a further flight into phantasy. But in this direction lies insanity, and we see, perhaps, in this mechanism something more of the psychology of dementia præcox, with its adolescent inferiority, overmastering urge for omnipotence, and flight into phantasy and regression.

If over-compensation keeps within the bounds of the individual's potential actual achievement, the results are only good, as for example was the case with the blind Hellen Keller. But it must be borne in mind that as a rule we are not dealing with such material, because the deficiency is usually more deeply seated and widely spread than a mere localised visual defect. *A gonad deficiency effects the patient's attitude towards the whole of life, and his deficiency is as real as his over-compensated demands upon life are abnormally exaggerated.* It is no wonder, then, that the problem of the treatment of dementia præcox is an extremely difficult one.

Let us repeat our only safeguard : "The standard of the demand which we make upon life must be less than is our individual potential capacity for achievement." The difficulty lies in the fact that our unconscious defensive over-compensatory mechanism has an innate tendency to flatly disobey this rule, with results that are frequently the cause of the development of more or less serious mental disorder.

Towards all over-compensators our first reaction is in terms of destructive criticism and an assumption of superiority, possibly with ridicule or sarcasm, in order to keep them in their places. But this is obviously quite the wrong kind of treatment, because they are already trying to escape from inferiority, and to make them feel still more inferior is not going to do them any good. Adolescence grows out of its assumption of knowing everything by learning something—i.e., by achievement. What all people suffering from inferiority require is sympathetic help towards real achievement from someone who is himself not too "superior."

Projection.—Sufficient has already been said about the value of destructive criticism, with its tendency to transfer to others the blame which we do not wish to shoulder ourselves. It is much preferable to cast the beam out of someone else's eye rather than to attend to the mote in our own.

Identification.—This is the psychology of hero-worship, and is again more useful and less harmful than any other mechanism. We tend to become like the people we admire, partly by a process of suggestibility and partly because they represent our wish-fulfilment. There is, however, a subtle danger lest we tend to compare ourselves with someone too far above our own possibility of real achievement. It would be disastrous for the chairman of a small committee, for instance, to identify himself with Mussolini, even though it might overcome his feelings of inferiority. In the same way the Christian religion presents a subtle danger to innumerable people suffering from inferiority feelings, by offering them a standard of identification which they are often too ready to accept and they are, indeed, often strongly encouraged to do so. It is a sign of psychosis when a person says that he is Christ, but there is often a tendency towards this identification not only in neurotics but in many exponents of religious principles, who have adopted it rather in phantasy than in reality. In spite of it, therefore, they are liable to be lacking in the ordinary standards of Christian charity.

Wishing to be Inferior.—Why should anyone wish to be inferior ? There are two possible motives for self-gratification to be found in inferiority itself—namely, *masochism and regression*, both of which offer a very subtle problem to those who are interested in psychological medicine. The masochist is always seeking for some excuse for self-pity and is the willing martyr who turns his other cheek for the pleasure of having it slapped. Destructive criticism is therefore accepted willingly if not joyfully, because inferiority is itself a desirable goal. Such people may complain of their illnesses and their sufferings and their ill-treatment, but they do not wish to have anything changed. It is therefore necessary to cure their masochism before anything else can be done. The wish to regress, to go back to the protection and priority of infancy, may also be achieved through an assumption of inferiority. The desire is to avoid the responsibility and obstacles of life, and if such a one is sufficiently inferior he is beyond criticism and beyond expectation of anything else, and therefore beyond any feeling of relative inferiority. These two classes of patients are extremely difficult from the point of view of constructive therapy.

The Spoilt Child.

The thorny and painful path trodden by spoilt children is paved by good intentions. They are surrounded by love and appreciation from earliest days. Life is made easy for them. They are led to expect everything to come to them without effort and their self-esteem is thereby exaggerated. But if they ever need to face reality, tragedy is inevitable. The love with which they have been surrounded is not of the mature unselfish kind, but the immature love of their parents for their own undifferentiated ego. Such affection, however generously it may be lavished, is no more than self-centred self-love, which has been transferred to the child as an extended attribute and possession of the parent.

The love which spoils the child is self-love, not object-love. It is the kind of love that is never far from fear and never far from possessive phantasy. Its effect on the child is disastrous because he or she expects always to be treated with the same tender protection and esteem. Opportunity for achievement is minimised and therefore self-confidence is lacking. Fear of reality is increased, but self-esteem and the measure of expectations are at the same time present in the highest degree. The boy who has been spoilt at home discovers what life is really like when he enters the public school, and also what his mother's "love" has been worth to him. He finds a gap which reality cannot bridge and he will require every defence mechanism in order to hold his own. If these are not sufficient, he must resort to invalidism or to alcohol to bridge the remainder of the gap. There is no greater tragedy in life than that of the spoilt child, because it is the tragedy of good intentions, where love has been poisoned unconsciously and unwisely by self-love.

CASE AA.—Woman, married, age 52; three children. *Complained of:* Recurrent depression. Bursting into tears. Physical weakness. Insomnia. Her husband stated that she was always trying to do too much at home and then breaking down in complete exhaustion. He said that she was extremely irritable and that it was impossible to do as you pleased in the house, as she was one of those house-proud wives who would rather a chair looked perfectly tidy than that it should be sat on in comfort.

Signs: Blood pressure 110/75. Height 5 ft. 1 in. Probably subthyroid.

History: She had been married 25 years, but had spent most of her married life in and out of nursing homes. The house in which she was living was old and rambling and contained about ten bedrooms, most of which were not used, but all of which were kept scrupulously tidy. She stated that she could never keep a maid (which was not to be wondered at) and that most of the housework and cooking, at intervals, devolved upon herself, but that she found it an intolerable burden.

She was the youngest of a family of athletic sisters, and had always been regarded as the invalid of the family. Where her sisters could go on playing tennis all the afternoon, one game made her feel as if she wanted to go and lie down. Rather than do that, however, she would go on playing until she felt like dropping. Because of her weakness, she felt that she was left out of everything at school, which made her resentful, as she was one who always wanted to be in the centre of everything.

When she married she took to her matrimonial responsibilities with exaggerated enthusiasm, but very soon found a great deal to complain of in her husband, who gradually turned more and more to his business to escape from the nagging of his disappointed wife. She had three children, all boys, whom she mothered with great energy in the intervals between every kind of illness, real and imaginary. After the third child was born she had to go to a nursing home, and after that more than half of every year was spent in nursing homes, where she was a complete puzzle to her physicians.

Her treatment consisted in helping her to realise her limitations and to dissociate her acceptance of them from any feeling of inferiority. When she first came into the nursing home she was vindictive in her criticism of everyone and everything, and spent most of her time in tears of self-pity. After a few weeks, however, she began to see that neither herself nor anybody else was as bad as she had previously felt them to be. Her husband being quite willing that she should do so, she was then advised to sell her house and to take a suite of rooms in a hotel where she would have no service problems and no responsibilities. At the same time she was given a small car of her own in order to avoid the fatigue which she always felt from walking.

The result was a complete success and she was able to live at a quite satisfactory "¾" level of existence, enjoying her life, appreciating the company of others, and for the first time stopped criticising her husband. She has remained in good health and has not since felt the need for successive periods of recuperation in nursing homes.

CASE BB.—Male, unmarried, age 31.

Complained of: Depression, anxiety, insomnia. "Life has always been a burden to me."

Signs: Dark, haggard, long hair, pathetic, asthenic. He looked like a doped and unsuccessful poet.

History: He was the eldest of three brothers and one sister. His father was a missionary, possessed of an insane temper and a Jehovah identification. As a small child the patient said that his father used to flog him with a slave-whip made of rhinoceros hide on every possible occasion and with every possible excuse, always with the verbal assumption that "God was on his side." He said that the only commandment which mattered to his father was the fifth. He described how his father had tried to teach him to swim when he was 5 years old by carrying him on his back to a rock out in the bay and there leaving him howling with terror for the whole morning. He thought that his father's idea was that this would harden him and so overcome his fear. His memories of his father were all of the same kind. For example, his father had told him that he should be very grateful to him for having chosen such a mother for him, as he might have chosen a much worse one. Passing a beggar in the street, his father would say, "That is what you will be when you grow up." At the age of 12 his father, being in a punitive mood, gave him an extra hard thrashing because he said "When Christ was your age He was already about His Father's business."

At the age of 17 the patient wished to enter a bank, but in the course of his examination he was discovered to have albuminuria. He accepted this as if it were his first piece of good luck in life, because it provided him both with an escape and an excuse. He went abroad, where he engaged in business for a few years and also fell in love. The latter, however, proved abortive because he did not tell the girl anything about it, but one day said to her mother, "I suppose it is no use my thinking of marrying your daughter?" and he was quite satisfied with her reply, "No, it is not." He had no defence mechanism to support his inferiority, other than a wish to be inferior. He was the self-accepted martyr, willing to be the least and the worst, pitying himself when no one else would pity him. He had one other satisfaction, however, and that was that in punishing himself he was also punishing his father, and this was unquestionably the strongest motive of his whole existence.

Such a patient has no wish to get well and, short of finding an environment in which some mother-substitute could make up to him something of what he had missed in life, it is doubtful whether any psychotherapeutic measures could hope to restore him to normality.

OPHTHALMIC HOSPITALS.—The Birmingham and Midland Eye Hospital reports that last year 2096 in-patients were admitted, an increase of 234 over the previous year, and the largest number ever before treated. Their average stay was 14·17 days and their weekly cost averaged £2 12*s.* 6*d.*, a fall of 5*s.* 7*d.* There were 45,074 new out-patients. In consultation with the city health department a system of home visitation of infants suffering from ophthalmia has been instituted, and two specially trained nurses have been employed for the purpose. Since the inception of the scheme in May last year over 1000 domiciliary visits have been paid, and the experience that has been gained shows that the additional expense has been amply justified. A new department for the treatment of squint by fusion training has also been established. The annual report adds that should this new method of treatment be productive of good results the department will have to be considerably extended to deal with the large number of squint cases attending the hospital.—In 1930 there were 964 in-patients at Wolverhampton Eye Infirmary; in 1893 the number was 468. The Hospital Saturday Fund contributed £4287.—The Sussex Eye Hospital last year dealt with 417 in-patients and 5832 out-patients, figures which show a large increase.

SPECIAL ARTICLES

PREVENTION OF BLINDNESS.

FOUNDATION OF AN INTERNATIONAL ASSOCIATION.

THE International Association for the Prevention of Blindness was founded and held its first session at The Hague on Sept. 14th, 1929, being associated with a meeting of the International Congress of Ophthalmologists at Amsterdam. Preliminary meetings had been held by a provisional committee, while a report from the League of Nations on the Welfare of the Blind as a world problem had also been published. The existing permanent organisation came into being at The Hague with the following executive:—President: Prof. F. de Lapersonne (France); Vice-President: Dr. Park Lewis (United States of America); Secretary-General: Dr. F. Humbert (Switzerland); Treasurer: Mr. Demachy (Treasurer of the League of Red Cross Societies); and the late Prof. Th. Axenfeld, replaced by Prof. A. von Szily (Germany), Dr. Roffo (Argentine), Prof. M. Marquez (Spain), Mr. Bernard Cridland (Great Britain), Prof. Trantas (Greece), Prof. J. van der Hoeve (Holland), Prof. E. von Grosz (Hungary), Prof. L. Maggiore (Italy), Dr. Shinobu Ishihara (Japan), Dr. Villarreal (Mexico), Prof. J. Szymanski (Poland).

Origin of the Movement.

The Association, through Mr. Cridland, desires to make known the origin of the movement, for its success will be quicker as pecuniary support is prompt while the back history shows how long the world has needed such work as is now progressing. Mr. Cridland writes:—

> The first organised attempt was the formation of the London Society for the Prevention of Blindness some 50 years ago, at about the same time that Credé's great work on ophthalmia neonatorum became known, and the first task that this society attempted was to propagand the value of this epoch-making discovery. Its next step was to offer at the Fourth International Congress of Hygiene in 1882 a generous money prize for the best essay on the prevention of blindness; this was awarded at the Fifth Congress in 1884 to the late Prof. Ernst Fuchs, at that time of Liége and later of Vienna, and it stands to the present day as one of the best papers on the subject. Then in 1903, and again in 1906, American legislation took a hand by making an investigation into the condition of the blind and the causes of blindness in the State of New York. In 1908 Mr. Bishop Harman established schools in which special education was carried out for children suffering from progressive high myopia and defective sight from other causes. In 1909, the notification of cases of ophthalmia neonatorum was made compulsory in Stoke-on-Trent and a little later in the county of Staffordshire generally, the rest of the country following. In 1914, owing largely to the foresight and energy of a great philanthropic lady, Miss Louisa Lee Schuyler, the United States National Committee (now Society) for the Prevention of Blindness, an entirely voluntary organisation, was founded and has progressed with such success, that now with a membership of 25,000 and an annual budget of 140,000 dollars a year it stands as an example to all civilised countries. In 1918, the Council of British Ophthalmologists was formed, its task being to act as an authoritative and representative body to assist Government departments and other representative bodies in, amongst other things, measures for the preservation and welfare of the eyesight of the community. In 1922, in this country, the Departmental Committee on the Causes and Prevention of Blindness published its second and final report, a work which has been accepted as authoritative throughout the world. In 1924, a step towards the prevention of the high percentage of blindness in China was made by the formation of an association called the International League for the Prevention of Blindness in China, and the task which lies before it is tremendous. In the same year Dr. Park Lewis, Vice-President of the United States Society for the Prevention of Blindness, delivered an interesting address at the Oxford Ophthalmological Congress, in which he put forward a plea for international coöperation in the work of prevention of blindness. In the following year, 1925, Mr. Treacher Collins, the honorary president of the International Congress of Ophthalmology, made "The Elimination of Eye Disease" the subject of his address when presiding in London over the Congress of English-speaking Ophthalmological Societies, and at the conclusion urged that "international coöperation against a common foe such as disease is the most likely way to secure international peace." In 1928 and 1929 a provisional committee studied the possibilities of international coöperation for the prevention of blindness and decided that the time had arrived for a definite movement of an international character towards this end.

The Inaugural Meeting.

Twenty-six different nations were represented at The Hague meeting, through individuals or delegates from the Red Cross Societies, societies concerned with public hygiene, infant welfare, prevention of venereal disease, and ophthalmology, and Prof. de Lapersonne delivered an eloquent introductory address, in which he set out the humanitarian and practical claims of a world league to prevent blindness. A translation of this address has been furnished to us by Mr. Cridland, from which the following excerpt shows the practical nature of the arguments employed to enlist the sympathy for the movement, not only of the humanitarians or the doctor, but also of business communities and politicians.

> "The enormous development of industrial life, particularly in the metallurgical, electrical, and chemical industries, has resulted in an increase in the number of cases of blindness caused by workers' accidents or occupational diseases, in spite of improved machinery and drastic labour regulations. Considered exclusively from the financial standpoint, statistics compiled by the State of Pennsylvania show that in the space of eight years more than 40 per cent. of the compensation awarded for permanent disablement have been in respect of eye injuries; out of a total of 15 million dollars paid out in compensation, 6 millions were granted for the loss of one or both eyes. In every country of the world, the Government, the health and labour departments, manufacturers' associations, and insurance companies should coöperate in order to ensure more adequate protection of workers' eyesight. I will not go further into the question of wounded soldiers than to say that after 12 years we are still confronted with the nightmare of war disabled men, 3500 of whom, in France alone, are blind. We must therefore persevere in our peace-time activities, promote friendly relations between nations, and help in the process of war liquidation."

The International Anti-Trachoma League, whose foundation was planned at the same International Congress of Ophthalmologists as the Association for the Prevention of Blindness, held a meeting in the Palace of the League of Nations in Geneva in the autumn of 1930,[1] when the League of Nations issued a circular letter to all Governments requesting support for the scheme, which clearly was cognate to the work of the International Association.

The Second Meeting.

The second meeting of the International Association took place last October at Brussels, and we have received, through Mr. Cridland, a full account of the proceedings. These show the particular value of assistance received from the United States and Red Cross, and lay stress on an inquiry being made into industrial accidents by ophthalmologists practising in appropriate areas, as well as to the active coöperation of the executive committee of the Anti-Trachoma League. The report of the general secretary explained that the issue of a world appeal was awaiting a more suitable time, but that the issue to a restricted number of well-wishers had met with a response which "almost wholly from members of the medical profession had been generous and very gratifying considering the small number of people concerned."

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[1] THE LANCET, 1930, ii., 359.

The rest of the proceedings consisted of a number of scientific communications, among which one may be picked out dealing with the conditions in China, by Dr. Lossouarn, of the School of Medicine, Tientsin. Dr. Lossouarn, who has been in practice in Tientsin for 17 years, supplied the result of investigations which showed that half a million persons in China have lost their sight from small-pox alone, constituting 35 per cent. of the total number of blind. Xerosis from faulty hygiene ranks next, although it must be presumed that this is a temporary cause only. Trachoma is the third numerical cause, followed by syphilis (50 per cent. of the population in the towns are infected) and gonorrhœa, whilst a common cause is injury to an eye by the pricking of any part of the organ by a relative or quack. The existence of the latter is not surprising when it is considered that there is only one Chinese physician with an occidental training for every 200,000 inhabitants. To combat this state of affairs, there are in Tientsin four dispensaries where vaccination, antisyphilitic treatment, and ophthalmic treatment are being carried out. There are 191 dispensaries in the interior, which do their best on similar lines in charge of missionaries, who receive eye drugs and vaccine free.

The session concluded with an interesting address on trachoma by Prof. A. Angelucci (Naples) in which he discussed the relationship of trachoma, follicular conjunctivitis, and adenoidism. From the interest generally displayed throughout the meeting, it may be concluded that the Association has made an excellent début. As the result of the decision that the time for the issue of the world appeal on behalf of the Association was inopportune on account of the general financial depression, it has been decided that national committees should be formed in the affiliated countries, and a British committee is now in the process of formation, details of which will be given shortly.

THE ABOLITION OF BILLS OF HEALTH.

By Gilbert E. Brooke,
P.M.O., SARAWAK; FORMERLY PORT HEALTH OFFICER, SINGAPORE.

A BILL of health is, or should be, one of the most important of all the documents carried by a sea-going vessel. In its influence on the world in general it far surpasses in value the other documents, such as manifests, clearances, and passenger lists, which help to fill a shipmaster's portfolio and a shareholder's bank balance.

Unfortunately a movement has, in recent years, been mooted to abolish bills of health altogether. In the Paris 1912 Convention no mention was made of bills of health except a casual reference, in Article 107, to a document required for pilgrim ships. In the 1926 Convention, bills of health are mentioned, in Article 49, for the first time; and then, alas, only to foreshadow (para. 4) their gradual abolition.

An analysis of the reasons for this action would seem to disclose a two-fold argument: (*a*) that the dissemination of information with regard to infectious diseases in the ports of the world and in their hinterland is now widely secured in Europe by the "Office International d'Hygiène Publique"; and, for the East, by the League of Nations Epidemiological Bureau in Singapore; and (*b*) that a percentage of shipping masters, and shipping firms, are averse to the payment of fees, for the issue of the bill of health and for a visa by a Consul.

The first of these reasons must have been put forward by persons unacquainted with the practical working of marine hygiene, who have quite missed the principles underlying the very valuable contributions of modern epidemiological staff work. A health officer boarding a number of ships each day does not carry with him a file of bureau reports through which he can laboriously search for information about the ports from which a ship has come. He expects to find the records of the previous week and of the whole year succinctly stated on the bill of health—in fact, in certain cases this is a necessity, for there are still ports devoid of liaison. The value of modern epidemiological information is not therefore as constituting an asset to the health officer boarding ships (who should have the help of his bill of health), but is rather that of an adjunct of paramount importance to the health officer in his office, on whose shoulders rests the responsibility of advising his government with regard to the imposition or removal of quarantine restrictions, and the necessity, or otherwise, for setting in motion the administrative machinery o action.

The second reason (*b*) given above is probably dictated by the exiguous profits resulting from the recent depression of trade. It is, of course, no argument at all for the abolition of bills of health, though it may indicate that the recommendations of Article 4 (1) of the Paris Convention might with advantage be carried out—viz., that bills of health should carry no fee. The very fact that two such reasons should have been put forward shows that the nature and functions of a bill of health are but little understood by the public.

It is better that the matter should be clearly grasped, since there are bills of health *and* bills of health. For many years the form in general use throughout the world was absolutely useless, and some of these futile forms still exist I fear. I quote some examples:—

> Aden, 23 March, 189—
>
> I hereby certify that this Port is free from all Infectious or Epidemic Disease dangerous to life, that the state of public health is good and that the Steam yacht Z—— leaves this Port under the most favourable sanitary conditions as regards the port.
>
> (Signed) ——————
>
> Port Surgeon, Aden.

The following is a form used for years by th medical officers of the Chinese maritime customs i some of the treaty ports:—

> "I certify that I have examined the crew and passenge of the s.s. ———— and that I find no signs of plagu cholera, or other infectious disease amongst them."
>
> (Signed) ——————

Somewhat similar and uninformative document are issued by the British consular service, British po authorities, and many others, including the gre port of London where the issue is in the hands of th Custom House and not dealt with by the healt authorities at all—which is like expecting a paymaste to make charts for the naval hydrographer.

The facts which a port health officer shoul properly glean from a bill of health are:—

(*a*) Description of the ship.
(*b*) Ports called at during the voyage.
(*c*) Deaths which have occurred on board.
(*d*) Number of cases and deaths on board from infectious diseases which have occurred during th voyage.

(*e*) When and where was she last disinfested or disinfected.

(*f*) The "present history" in each port, covering points which may be of extreme importance—e.g., (1) whether the ship has been berthed at a wharf—or in an open roadstead which covers the question of rats and mosquitoes. (2) What is the nature of the cargo—i.e., is there rat-suspicious cargo on board. (3) Has she taken water and fresh provisions on board. This is often very important, depending on the port and its conditions. (4) How many passengers of each class are leaving on departure.

(*g*) The health condition of the port at which the bill of health is issued. This should cover not only the number of cases which have occurred in the port during the week preceding departure, but also a summary of the total cases in the port, from the beginning of the year, to date.

A sample of a satisfactory bill of health will be found in "Marine Hygiene and Sanitation" (Baillière, Tindall, and Cox, 1920, p. 334).

MEDICAL SOCIETY OF LONDON.

ANNUAL DINNER.

THE 158th anniversary dinner of the Medical Society of London was held at the Trocadero Restaurant, London, on Friday, March 6th, Dr. R. A. Young, the President, being in the chair and presiding over a large company of Fellows and guests, among whom were the following: Mr. Norman Birkett, K.C., M.P.; Mr. E. R. Peacock; Sir William Rothenstein; the President of the Royal College of Physicians; the Master of the Society of Apothecaries; Director-General, Medical Department, the Royal Navy; Director-General, Army Medical Services; Director of Medical Services, Royal Air Force; the Presidents of the Royal Society of Medicine, the Royal Society of Tropical Medicine and Hygiene, the Hunterian Society, the Chelsea Clinical Society, and the Harveian Society; the Chairman of Council, British Medical Association; and the Editors of *The Lancet* and the *British Medical Journal*.

After the loyal toasts the toast of the evening, Prosperity to the Society, was proposed by Mr. Norman Birkett, who in a witty speech disclaimed any attempt to compete with the 157 predecessors who must on similar occasions have paid tribute to the services and merits of the Society. He gave as the reasons why he was particularly pleased to be associated with the toast that such an occasion represented the exercise of hospitality, the cementing of friendship, and the advance of knowledge by intercommunication.

The toast was replied to by the President who, pointing to the position enjoyed by the Society, said that it was not only the oldest of the medical societies and, in some senses, their parent and exemplar, but had a place in the affection of its Fellows, suggesting an indefinable aura or soul—the quality that gives charm to a woman and personality to a man. He liked to think that the generous spirit of the Founder, the great Lettsom, brooded over the meetings and that the predecessors of their labours fructified their debates. In a brief narrative of the history of the Society, he said that on June 23rd, 1773, Lettsom published hints for its establishment with the intention of bringing practitioners into intercommunication, and that the by-laws then suggested showed no material alterations. He gave an amusing description of the difficulty which the new association experienced in finding a home, for Lettsom attempted to get rooms in the Queen's Arms tavern at Newgate-street, "for not more than 10 guineas a year," while a subsequent attempt "to become tenants at 15 guineas a year" of premises in Wardrop-court proved unsuccessful. But in August, 1773, some meetings were held at the Sun Tavern, and later accommodation was found in Crane-court, both in the City. At last a house was taken in which rooms were sublet to a doctor who had to be evicted for non-payment of rent, and here, said Dr. Young, the earliest meetings were characterised by the friendliness which now marked their proceedings, until a serious breach in this urbanity occurred in 1775 when the President and both the secretaries resigned and locked the premises against the Fellows. Lettsom was called in as a mediator, peace was restored, and on July 4th of that year the first anniversary dinner was held at the King's Head Tavern, the inclusive price of the dinner being 5*s.* 6*d.* In 1788 Lettsom gave a freehold house in Bolt-court to the Society which they occupied for over 60 years, until, in 1850, after the amalgamation with or absorption of the Westminster Medical Society, they migrated to Hanover-square, remaining there till 1871. In that year the present premises in Chandos-street were taken on lease, the freehold being obtained a few years ago. Dr. Young emphasised that now, and for the first time in the memory of Fellows living, the Society was free of debt, while it was housed on its own freehold property, and in this connexion he paid special tribute to the foresight and energies of a former treasurer. Dr. Harold Des Vœux, and Mr. Haines Carter, the registrar. He further informed his hearers that practical steps were being taken to ensure the maintenance of their prosperity, for the Council, in order to prevent the necessity of future borrowing and to meet present aspirations, was starting an endowment fund, having the sum of £25,000 as an objective. Recurring to back history, Dr. Young quoted from Fernandez Clarke's well-known "Recollections of the Medical Profession," mentioning that Clarke, like himself, had been a member of the staff of THE LANCET. The description given in this book of the meetings of the Medical Society at that time showed a curious procedure, for the President would at any time leave the chair and address the meeting at considerable length, taking off the presidential cocked-hat to do so, and resuming it when he returned to his chair. Dr. Young, in closing, confessed to having always longed to be President of the Society, while he regretted the loss of the cocked-hat, which had been worn by presidents until 1838 and remained in the possession of the Society until 1874 when it disappeared.

The toast of the visitors was proposed by Lord Dawson who, referring to Mr. Norman Birkett's distinguished position, and comparing the professions of law and medicine, said that, while he admired immensely the powers of reasoning displayed by lawyers, he was bound to point out that they had a very safe outlet in the provision for "reserving judgment." Further, they obtained equal esteem as advocates whether in the issue they turned out to be right or to be wrong; infallibility, he said, was not expected of lawyers, was assumed for themselves by journalists, but expected from the public from doctors. Lord Dawson here gave an estimate of the services rendered to medicine by the work of the *British Medical Journal* and *The Lancet*, words which received gratifying endorsement from the company. Sir William Rothenstein, he added, we welcome as a great artist and again as a teacher, first at Sheffield University and later at South Kensington. As a portrait painter he delineates what Nature fashions and intends, and what we try to preserve in their strength and beauty. Like us he possesses the aptitude of seeing the truth he knows not how—for does it not happen that the painter depicts features which anticipate happenings?

The toast was replied to by Mr. E. R. Peacock, Director of the Bank of England, who adduced as his personal tribute to the progress of medicine his early recollections as a child in Canada. He recalled the dramatic circumstances of a surgical accident in his own family in an outlying village in Ontario, when there were, of course, no telephones, happened to be no telegraph service, and worst of all no roads, but only unlighted and undefined tracks across marshes. He compared the conditions with regard to medical service of those days and the present time, pointing out how prominently the developments of medicine showed up in the progress of the world. He closed by paying an eloquent tribute to the medical profession for the amount of unpaid work that they were expected to do by the public, and which they did cheerfully, and most of the time without the cognisance of the outside world.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

MINERALS IN PASTURE.

FOR some years an investigation into the mineral content of natural pastures has been carried on in Scotland and in Kenya under the auspices of the Economic Advisory Council. The committee includes Major Walter Elliott (chairman), Sir Robert Greig, Secretary of the Department of Agriculture for Scotland, and Dr. J. B. Orr, Director of the Rowett Research Institute, Aberdeen. The latest report (obtainable from H.M. Stationery Office) contains valuable information on the effect of fertilisers on the soil and indirectly on the grazing animals. The results of the feeding experiments are perhaps the most striking. In the districts where pastures were deficient in certain minerals, the provision of these to the grazing animals was followed by an increase of about 30 per cent. in the yield of dairy cows, about 10 per cent. in the rate of growth of lambs, and about 10 per cent. in the weight of the fleece of sheep. In the districts where the pastures were rich in minerals, supplements of this kind had no definite effect on the milk yield or rate of growth of lambs. In one of the districts, where the investigation had for its object the discovery of a method of preventing a disease, "nakuruitis," believed to be due to some deficiency in the pasture, it was found that the disease was prevented if the animals were allowed access to a mixture of common salt and an iron salt. In the districts examined, the deficiency was mainly in sodium and to a less extent in chlorine. In one of the districts the pasture, apart from deficiency in sodium and chlorine, was as rich as good British pasture. In the other three districts the pastures were deficient in all mineral nutrients and also in protein, the greatest deficiency being in phosphorus. In one of the districts the deficiency of phosphorus was as great as they found in certain areas in South Africa where it is the cause of disease in cattle. The application of different kinds of fertilisers to the pastures in the most deficient areas increased the yield of pasture from 25 per cent., where the common salt only was used, to 400 per cent., where nitrogen and phosphates were used. Where phosphates were used the pasture remained green during the drought for a longer period than the surrounding untreated pasture. Grazing animals showed a marked preference for the parts treated with fertilisers. The expense of the investigation has been met by the Empire Marketing Board and the Kenya Government.

OBSERVATIONS ON CHILDREN.

I am glad to notice that the work carried on by Dr. A. Rowland at the James Mackenzie Institute, St. Andrews, continues to be supported by the Medical Research Council. It is hoped to obtain data from 500 children in respect of family history, environmental conditions, diet and general nutrition, dental diseases, and sickness. Records of 252 children are now complete and are being analysed. It is expected that this long and elaborate research will illuminate many obscure points in the disease history of young infants. It is quite in the spirit of Sir James Mackenzie's conception of research. He wished particularly to direct attention to the approximate moment when abnormalities either of structure or function asserted themselves in the growing organism. The conditions at St. Andrews, both at the Institute and in the city, are favourable for this type of investigation.

DRUG ADDICTION.

In a recent lecture at Glasgow Prof. A. J. Clark, of Edinburgh, said that the abuse of drugs of addiction was one of the difficult problems confronting modern civilisation. Last century the dominant problem was the export of opium from India to China. That trade ceased early in the present century, but to-day the export of opium from Persia was increasing rapidly. A commission to the League of Nations had recently reported on opium smoking in other countries in the Far East, and their report gave reason to hope that that evil would be checked by the concerted action of the Powers concerned. A much more serious danger, however, was the internationa traffic in alkaloids of addiction—morphine, heroin and cocaine. These alkaloids were invented here and up till recent years Europe had produced nearl the whole. The populations of the Near and Fa East suffer far more from addiction to these drug than the European countries did. At present, th outstanding problems were heroin addiction i Egypt, morphine and heroin addiction in China, an cocaine addiction in India. Smuggling into the countries was conducted by international gangs, an single consignments of more than half a ton had bee seized. It was known that at least four tons heroin had been smuggled into Egypt in a year. Th significance of these figures was best indicated by th fact that a ton of heroin represented 100 million ther peutic doses, and that the legitimate medical use heroin only amounted to about two tons a year the whole world. Prof. Clark remarked that t first duty of the nations of Western Europe was fulfil The Hague Convention of 1912, and to lim their manufacture of their alkaloids of addiction quantities commensurate with the medicinal nee of the world. There would then remain the proble of how to prevent unscrupulous international gang from establishing factories in poor and backwar countries and pouring out a flood of poison fro these bases.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

SCHOOL HOURS.

A MOVEMENT is on foot to rearrange the school hours in Ireland so as to allow a child to get a solid meal at his own home in the middle of the day. At present the primary schools open at 9.30 or 10, and do not break up until 3 P.M., half an hour being allowed in the middle of the day for lunch and play. Children do not leave the school premises during this half-hour but ordinarily spend it playing in the yard. Five hours without a solid meal for growing children is obviously too long a period, and by the time the child arrives home he is often so tired as to have lost his appetite. Moreover, in working-class homes, dinner, the principal meal of the day, has been cooked and eaten an hour or two earlier, at the time the father came home from his work. The mother is unable to cook two hot dinners in the day, and the child usually gets only bread and tea. To remedy this state of affairs it is suggested that school should be held in two sessions of two or two and a half hours, with a break of two hours in the middle, say from 12 to 2. This has been strongly urged by several correspondents of the daily press recently, and in the towns at least there seems to be no strong argument against it. In some country districts, however, the distance between the school and the home may be so great as to render a visit home in the middle of the day impossible. It is a pity that the good case for reform should be spoiled by the extravagance or looseness of thought of some of its supporters. One does not doubt that the present system of school hours tells against the health of many of the children, but the facts should be stated without exaggeration or violence. The well-informed statements of the medical officer of health for Dublin and the school medical officer afford a relieving contrast to the somewhat hysterical outbursts of others of the reformers.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

HEALTH IN 1930.

REPORTS from the health departments show little evidence that the industrial depression has had any adverse effect thus far upon the health of the nation. "The health of the people of New York," we are told, "has never been better." There were fewer deaths from most of the important diseases of childhood than ever before, and the infant mortality (58) is the lowest on record. A new minimum death-rate was established in tuberculosis. The health officer points to increase in homicide and suicide as being "very likely a direct reflection of the bad economic situation." Dr. Dublin notes the increase of suicide amongst the industrial policy-holders of his great life assurance company and offers the same explanation. The Metropolitan in other respects has also had a record year—the lowest mortality in its experience, a new minimum for tuberculosis and also for the communicable diseases of childhood. The diphtheria death-rate in three years has been almost cut in half. In a single year it has been reduced more than one-third. In this country we are disposed to congratulate ourselves that we are showing the way to older nations in the matter of diphtheria prevention.

DANGERS OF METHYL-ALCOHOL.

From the beginning of the cold season a controversy has been going on about the use of wood-alcohol as an anti-freeze in the radiators of motors. As early as October the Industrial Commission of Wisconsin issued a warning poster pointing out that wood-alcohol is poisonous whether swallowed, inhaled, or absorbed through the skin. The warning added that "authorities advise" that it is a cumulative poison, that the toxic dose is not large, and that the poison is easily vaporised in automobile radiators. About the same time (Nov. 2nd) Dr. Morris Fishbein (editor of the *Journal of the American Medical Association*) is quoted as having said that "If this substance (wood-alcohol) is to be used as an anti-freeze mixture in the coming winter, employees of garages who will inhale large amounts are likely to suffer injury as a result. . . . As is usual in modern industries, the name of the product has been concealed by the bestowing of fanciful names and the average person does not recognise, under the fanciful title, the old, old hazardous wood-alcohol."

On Dec. 6th the U.S. Bureau of Mines issued a report containing the following provisional conclusions and recommendations:—

1. Observations made by the Bureau of Mines have indicated there is no danger of poisoning from the use of methanol as an anti-freeze for automobile radiators.
2. The evidence that methanol poisoning has been caused by absorption through the skin is rare and inconclusive.
3. Practically continuous exposure to low concentrations and short intermittent exposures to high concentrations of methanol can see no apparent harm, but on the other hand continued exposure to high concentrations will cause serious poisoning.
4. All methanol, whether made by wood distillation methods or synthetic methods, or whether it is crude, refined, or highly purified, is poisonous when taken internally. It will cause serious poisoning, blindness, and possibly death when as little as two ounces is taken into the stomach.
5. To avoid misuse it is recommended that in the future all anti-freeze methanol be brightly coloured to enable garage attendants and the public to identify it as methanol; and to warn against misuse, particularly for beverage purposes.

At this point the U.S. public health service joined its authority to that of the Bureau of Mines. Surgeon-General Cumming exonerated methyl-alcohol as an anti-freeze, but he again emphasised the danger of drinking methyl-alcohol and spoke also of the danger of its use in shellacs. He recommended that at present methanol be sold to the public as an anti-freeze only. The controversy, however, has not come to an end. On Dec. 11th Hon. Leonidas C. Dyer read in the *Congressional Record* an article by Mr. Henry C. Fuller, formerly a chemist in the U.S. Dept. of Agriculture, in which he questions whether methyl-alcohol should ever be used when substitutes are available. Fuller quotes Tyson, surgeon to the Knapp Memorial Eye Hospital, New York City, who made a report before the American Medical Society for the study of alcohol and narcotics in December, 1915, as follows:—

> "When its vapour is inhaled in a confined space it is just as poisonous as if the same quantity had been imbibed, as evidenced by the many cases of partial or total loss of vision and death observed in workers varnishing the interior of beer vats, in closed rooms, lead pencil varnishers, hatters, metal workers, and others."

A few days later the Health Commissioner of New York in announcing a projected amendment in the sanitary code "regulating the sale, handling, and use of anti-freeze compounds containing wood-alcohol," said that instances had come to the attention of his department in which painters using varnishes made of wood-alcohol were killed by the fumes. "It is well known," said the Commissioner, "that the vapours of wood-alcohol are poisonous and deadly and often fatal. It must be remembered that wood-alcohol is easily vaporised. When subject to the heat of an automobile radiator there is, of course, an evaporation and the deadly fumes are given off." An additional warning comes from the Health Commissioner of Massachusetts, who says that he sees no advantage in methanol as an anti-freeze mixture, as found on the market, over denatured alcohol. "It is no cheaper, it is no more effective as an anti-freeze, it is far more poisonous, and its vapours have much less characteristic odour."

ACCIDENTAL DEATH.

An analysis of the 10,103 deaths from accidents in New York State during 1929 brings out some interesting comparisons. The proportion of males to females in this group is more than 2 to 1. The chief cause of accidental death above 1 year and over 65 years is the automobile. Among school-children it accounts for nearly one-half of all fatal accidents. The chief accident of babyhood is mechanical suffocation and that of old age is "falls." Burns reaches the place of prominence among accidents in the second year of life, accounting for 32 per cent. of all fatal accidents in that age-period. In the entire State accidents were responsible for 8·8 per cent. of all male deaths and for 4·0 per cent. of all female deaths. In the age-group 15–24 years 36 per cent. of all deaths were due to accident.

EUROPEAN TOUR.

The Interstate Postgraduate Medical Association of North America announces that its seventh European tour will be held this year from May 10th to July 11th. The party is due to leave Montreal on May 15th and arrive in Liverpool on the 22nd. After spending four and a half days in London they will visit Birmingham, Liverpool, Dublin, Glasgow, Edinburgh, and Manchester, and then proceed to the Continent via Amsterdam.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

DIETETIC RESTAURANTS.

ECONOMIC and financial crises go hand in hand with an increase of nervous disorders, and the post-war difficulties of bread-winning manifest themselves in gastric disturbances, including dyspepsia, hyperacidity, and consequent gastric and duodenal ulcers. The number of those needing special diets has thus increased immensely, and since many of the sufferers are bachelors and spinsters and people who take their meals away from home a demand for dietetic restaurants has arisen. The health council of the city of Budapest, appreciating this public demand, is establishing in several districts dietetic kitchens where foods will be prepared under strict medical control. The first such dietetic restaurant was opened a short time ago, and is now crowded. It is under the control of Dr. Aladar Soos, lecturer on dietetics in the University, and any guest is served according to the prescription of his physician. During lunch and dinner a physician is always on duty to give advice, in case of necessity, on what to eat, and in special cases he tells the chef how to prepare the food. The meals are fairly cheap, so that even those with moderate income can avail themselves the boon of this restaurant. The price of a lunch is: 1st class, 1·50 pengö (1*s.*), and 2nd class, 1 pengö (8*d.*), while dinner costs 1·20–1·80 pengö.

THALLIUM POISONING.

Dr. Vasarhelyi has administered thallium by mouth to rats, dogs, and cats, and reports that when the hair began to fall out he found hyperkeratosis in the stratum corneum, minute abscesses under this stratum, and vacuolation of the stratum spinosum. The stratum papillare was tumefied, rich in blood, and here and there showed cellular infiltration. In a more advanced stage of the intoxication the sebaceous glands were structurally destroyed, the blood-vessels of the corium were highly dilated, and infiltration by pus cells extended also into the deeper layers of the skin. In many places also the hair follicles were invaded by pus cells. In the stage of complete baldness no particular changes were noted in the skin, apart from a remarkable increase of eosinophil cells. Thallium could be demonstrated in the urine, fæces, salivary glands, muscles, liver, and skin, but not in the thyroid, adrenal gland, or testis. He attributes thallium epilation to purulent inflammation of the skin.

DIETETIC TREATMENT OF TUBERCULOSIS OF THE SKIN.

Dr. Schlammadinger has lately described his experiments with treating skin tuberculosis by the Gerson-Sauerbruch-Herrmannsdorfer diet. Of eight patients treated for 6 to 12 months one could be declared as entirely cured; the lesions gave place to fine cicatricial tissue. The other seven patients also showed very remarkable improvement. The results were noteworthy, because these cases defied other therapeutic methods, including treatment with gold. Schlammadinger thinks, however, that his good results are partly attributable to change of environment, rest, good food, air, light, and in general better hygienic conditions. He finds that lupus patients treated by diet are much more susceptible to erysipelas than other lupus patients, and show a much stronger allergic reaction against tuberculin. According to Fornet this is because of a change in the acid-base equilibrium.

ROYAL MEDICAL BENEVOLENT FUND.—The ninety-fifth annual general meeting will be held in the lectu room of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Tuesday, March 17th at 5 P.M., Sir Thomas Barlow, the President, in th chair. The report and statement of accounts for th year ended Dec. 31st, 1930, will be submitted and th officials and committee of management for the ensuing ye be chosen.

At two recent meetings of the committee 77 grant amounting to £1779, and 40 grants amounting to £947 we voted, making a total of £2726 during the first two mont of this year. Of this sum £2218 was distributed as mai tenance grants among 92 beneficiaries whose small incom required extra help in order that the necessities of li might be obtained. The balance was given to some wh had broken down in health and to others who were temporary difficulties. The following are particulars of few of the cases recently helped:—

M.R.C.S., aged 75. Suffering from malignant disease of t prostate and bedridden for many months. Applicant and wife, who is quite an old lady and who is worn out by nursing husband, were found to be living from hand to mouth in ve straitened circumstances. The local medical society has made collection among its members to assist this old couple. The Fu voted £45.

M.R.C.S., aged 76. Applicant gave up practice after 38 yea of work owing to ill-health. His practice was not a lucrative o and he brought up and educated six children, one of wh qualified in the medical profession. Owing to his heavy fam expenses his savings on retirement were very small and he and wife are practically penniless. The couple are now boarding w a son who is an electrician earning £300 a year; this extra burd has thrown the son into debt. The Fund voted £15.

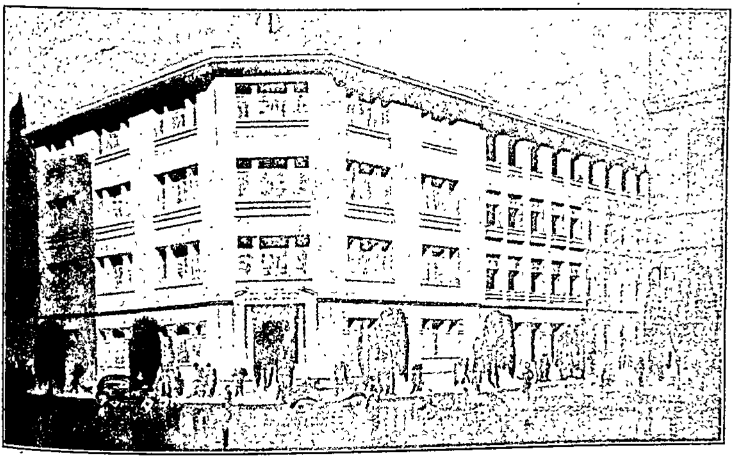
M.R.C.S., aged 67, married. Suffering from aortic disease a unable to work. The capital saved after 30 years of work w lost through no fault of the applicant, but through a busine failure. Relations are contributing £100, and the wife has private income of £25. The Fund voted £10.

Cheques should be forwarded to the hon. treasurer of t Fund, 11, Chandos-street, Cavendish-square, London, W.

AN ALL-INDIA INSTITUTE OF PUBLIC HEALTH.

THE ROCKEFELLER GIFT.

WE are now able to give an illustration of the Institute of Hygiene and Public Health which is rapidly rising opposite the School of Tropical Medicine in Calcutta, to be completed, if all goes well, by the end of the year, and opened for work early in 1932. Prior to 1920 medical graduates in India had to go abroad for systematic study of tropical medicine and hygiene, although in 1914 Sir Leonard Rogers had conceived the idea of establishing institutes for this purpose in Calcutta and Bombay. Circumstances prevented these views from coming into fruition, but Rogers's perseverance and enthusiasm, aided by the generosity of the Governments of India and Bengal and various private benefactions, brought about the opening in 1920 of the Calcutta school in which teaching and research were combined. A chair of hygiene was established, and a course of instruction arranged for the University diploma of public health. It was soon realised that this arrangement did not meet completely the need of India for workers highly trained in general hygiene as well as for specialists in some particular branch of public health. In his annual report as public health commissioner in 1925, Maj.-Gen. J. D. Graham dwelt on the increasing evidence that a considerable section of the Indian community was thinking seriously on public health problems. "This is a work," he said, "which has to be done for the benefit of Indians. To be effective it must carry conviction and establish its position against immemorial conservatism and tradition; it must therefore be done by Indians. It presents a grand and unlimited field for public health workers, but it is well to recognise that the improvement cannot be achieved when the expert labourers are too few in number . . . . Scientific knowledge in regard to the prevention of certain communicable diseases has far outstripped its application in the field." This view, repeatedly endorsed by Maj.-Gen. J. W. Megaw, the head of the school, was brought home to Dr. W. S. Carter, associate director of the Rockefeller Foundation, on his periodic tours of the Far East, with the result that he became deeply impressed with the necessity of establishing an All-India institute. Much of the teaching in basic subjects, such as bacteriology and protozoology, being common to the diplomas of public health and of tropical medicine, the advantages were obvious of Calcutta as a location for the institute, and of a site close to the school, where the basic subjects would continue to be taught, the institute being devoted to subjects especially related to Indian requirements. The Rockefeller Foundation offered to provide the cost of the site, and to build and equip an institute on the assurance of the Government of India to meet the cost of staff and maintenance after the building was handed over.



The Institute as it will appear on completion.

A site was acquired in July, 1930, and building commenced in September. A constructional committee composed of the public health commissioner with the Government of India, the surgeon-general with the Government of Bengal, the chief engineer with the same Government, the chairman of the Calcutta Improvement Trust, and the accountant-general, Bengal, was appointed to arrange for its construction. Lieut.-Colonel A. D. Stewart, professor of hygiene in the Calcutta School of Tropical Medicine, was appointed director-designate of the new institute, and Lieut.-Colonel A. A. E. Baptist, assistant director, to superintend the construction and equipment. The building was entrusted to Messrs. Martin and Co., Calcutta, who engaged Mr. T. Edmondson as supervising architect. The site practically adjoins the school, with which it will harmonise in design. The plan is based on a unit room of 25 ft. by 21 ft. The building, which is four-storied and E-shaped, the long limb being in the centre, will have six sections: (1) public health administration; (2) sanitary engineering; (3) vital statistics and epidemiology; (4) biochemistry and nutrition; (5) malariology and rural hygiene; and (6) maternity and child welfare and school hygiene. Each section will be allotted one unit room for the head of the section and two unit rooms for the workers. The working sections are placed in the central limb of the building facing north with unimpeded north light. In the west block are the administrative rooms, lecture theatre, practical class rooms, museum, and an auditorium to seat 200. The eastern limb will house store rooms, common room, and lunch room for students, spare working rooms, and lavatories; a separate annexe provides for an animal room on each floor. The library is in the centre block on the top floor. Three unit rooms on each floor and the library and reading room will be provided with conditioned air during the hot months of the year. The head of each section will thus have a cooled room, and there will be a spare cooled unit room on each floor where workers on that floor may work in comfort, or engage in any special work requiring a cooled atmosphere.

Each section will be staffed by a professor, an assistant professor, and laboratory or other assistants. The primary object of the institute being to bridge over the gulf between the results achieved by pure research and their practical application to the community, its function will be primarily instruction. The subjects for the D.P.H. Part I. will still be taught by the staff of the tropical school, but the specialised subjects in public health will be taken by the staff of the institute. The examination for the D.P.H. is conducted by the University of Calcutta, with which the new institute will in due course be affiliated. It is also intended to provide short post-graduate instruction in special subjects for public health workers desiring to pursue advanced study, and it is probable that the University will institute a higher degree or doctorate in public health science which will require a year's training in the institute in some special branch of public health science. Special courses in child welfare and public health nursing may be instituted for women graduates and nurses respectively. The institute will be coördinated with the various aspects of practical hygiene and public health all over India, and will, it is hoped, render assistance to administrators and workers and institute as well as make investigations of a practical nature in the application of medical research and knowledge for the betterment of the Indian people.

OBITUARY

HUGH PERCY DUNN, F.R.C.S. Eng.,

CONSULTING OPHTHALMIC SURGEON TO THE WEST LONDON HOSPITAL.

THE death of Mr. Percy Dunn occurred on Monday, March 2nd, at Beckenham, at the age of 76.

Hugh Percy Dunn was the third son of the Rev. J. Woodham Dunn, vicar of Warkworth, Northumberland, while his mother was the daughter of the Rev. Luke Yarker, a Yorkshire clergyman. He received his early education at the Richmond (Yorkshire) Grammar School, but was for a time at the Clapham Grammar School before entering at St. Bartholomew's Hospital in 1873. He qualified in 1876 as M.R.C.S. Eng., a diploma which at that time covered the courses necessary for registration in medicine and obstetrics also, and proceeded to hold various resident appointments. He took the F.R.C.S. in 1880, when he decided to specialise in ophthalmology, and obtained an early appointment at the West London Hospital, which at that time had a surgical staff composed of St. Bartholomew's Hospital men. The surgeon for diseases of the eye was the late Mr. Bowater Vernon, and Dunn, who had discharged the office of pathologist at the West London was appointed assistant ophthalmologist in 1885. He succeeded Mr. Vernon in full office in 1898, and for the ensuing 16 years was senior ophthalmological surgeon to the hospital, a post from which he retired in 1914, when he was unanimously elected consulting surgeon. Both in his hospital work and in his private practice he showed himself thoroughly competent as an operator, while he published many clinical papers recording his experiences over a large range of practice.

But apart from his scientific work and writings Dunn was a well-known journalist. He used his medical knowledge modestly as well as wisely for the dissemination of sound teaching to public audiences, and several of his papers, notably his essays in the *Nineteenth Century*, were marked by a bold grasp of essentials when conveying valuable lessons to laymen. He was for many years editor of the *West London Medical Journal*, of the *Medical Press and Circular*, and of the Fellowship of Medicine *Bulletin*, while at the time of his death he was interested in the production of the *Franco-British Medical Review*.

Dunn was also throughout his life a stalwart worker in the cause of post-graduate medical education. At the time that he was elected to the staff of the West London Hospital that forceful character, Charles Keetley, was engaged in organising a medical school in connexion with the hospital, and, although this attempt failed, it undoubtedly prepared the way for the successful post-graduate school known as the West London Post-Graduate College, with which the late Leonard Bidwell and Dunn were closely associated.

A personal and intimate friend of Percy Dunn, of many years' standing, testifies to some of his qualities in the following words: "Dunn's outstanding characteristic was an uncompromising loyalty to the persons he liked and the causes he approved of—a loyalty, indeed, which was sometimes almost embarrassing. He was contentious, quick-tempered in argument, but fair, and always ready to listen as well as to talk, a good and cheery companion up to the last, and I was with him shortly before his death. He preserved the capacity for enjoyment of simple pleasures. He was among the least sophisticated men of his years and experience one could meet. He was kindness personified when his interests were engaged, and would think no trouble too great if thereby he could help a friend, a statement that the writer can vouch for personally. He was a worker of remarkable energy and absolutely died in harness. In former days he was a mighty bicycle rider and many thousands of miles he had pedalled with a boon companion in this country and on the Continent."

DOUGLAS DREW, M.D. Lond., F.R.C.S. Eng.

WE have already briefly announced the death of Dr. Douglas Drew, which occurred at his country house near Bexhill on Feb. 25th in his sixty-fourth year. Although he had lived for so many years in emi-retirement, his interest and practical coöperation n surgical work had not abated; and the news of his eath has roused much sympathy with a brave ufferer.

Douglas Drew received his medical education at Iniversity College Hospital, where, after holding ertain resident appointments, he became surgical egistrar, when he fell under the notice of Victor lorsley, to whom, as a private assistant, he owed his arly advancement. Drew did not obtain the post n the staff of University College which he coveted, ut he established in the minds of his colleagues and f the students a reputation for ability as a teacher nd capacity as a diagnostician. The vacancy on he staff for which he was candidate fell to Rupert Jucknall, whose life was so sadly brief, but by that time Drew had found other outlets for his talents. He was ppointed assistant surgeon to the Queen's Hospital or Children, and to the Hospital for Women in oho, and at both places showed the qualities which ere expected of him—care, knowledge, and technical kill. The amount of hard work he put in at these stitutions was remarkable, considering that for a onsiderable period he suffered from obstinate astric ulceration. In 1914 he returned to the untry, but did not wholly withdraw from professional ork; that had been his intention when he took the use at Cooden, but the retirement was only partial, r he carried on a considerable amount of work as consultant and operating surgeon in the Bexhill strict. The tribute to his skill and character hich appeared in the *Times*, from Dr. Eric Pritchard, mediately upon Drew's death, well represented the ew of Drew's professional colleagues and friends. e was a brave man who faced his own acute fferings for many years while doing good for his neration.

Dr. Charles Bolton writes: "Douglas Drew held e post of surgical registrar at University College ospital when I was a student, and there can be no oubt that he fully maintained the reputation of this st both by the influence which he exerted on the udents and by his ability as a teacher. He was a ood surgical diagnostician and enthusiastic in his ork. He was not appointed to the staff, as the ext surgical vacancy, for which he was a candidate, as filled by that brilliant young surgeon, Rupert ucknall, whose career was cut short in such an ptimely fashion. Drew was my colleague on the aff of the Queen's Hospital for Children a few years ter. He had developed a good practice and was an pert operator. The staff of this little hospital got remarkably well together, and Drew was popular ith us all. He was a hard worker, and it is remarkable that he could do what he did with so much energy, gularity, and enthusiasm, when one considers that he ffered for 23 years from the painful and debilitating sease, which finally killed him."

INFECTIOUS DISEASE

ENGLAND AND WALES DURING THE WEEK ENDED FEB. 28TH, 1931.

Notifications.—The following cases of infectious sease were notified during the week:—Small-pox, 17 (last week 250); scarlet fever, 1618; diphtheria, 166; enteric fever, 54; pneumonia, 2706 (last eek 2501); puerperal fever, 50; puerperal pyrexia, 23; cerebro-spinal fever, 73 (last week, 78); acute oliomyelitis, 1; encephalitis lethargica, 14; ysentery, 9; ophthalmia neonatorum, 96. No ase of cholera, plague, or typhus fever was notified uring the week.

The number of cases in the Infectious Hospitals of the London County Council on March 3rd–4th was as follows: Small-pox, 188 under treatment, 1 under observation (last week 219 and 5 respectively); scarlet fever, 1423; diphtheria, 1025; enteric fever, 239; measles, 125; whooping-cough, 367; puerperal fever, 30 (plus 15 babies); encephalitis lethargica, 122; poliomyelitis, 1; "other diseases," 157. At St. Margaret's Hospital there were 12 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 70 (2) from measles, 4 (0) from scarlet fever, 59 (11) from whooping-cough, 42 (8) from diphtheria, 52 (15) from diarrhœa and enteritis under two years, and 546 (79) from influenza. The figures in parentheses are those for London itself.

Five deaths from meningococcal meningitis occurred in London—1 under 1 year, 2 from 15–25 years, 1 from 45–55 years, and 1 from 55–65 years. The fatal cases of enteric fever outside London occurred at Walthamstow and Hull. Sixteen fatal cases of measles were reported from Liverpool, 9 from Newcastle-on-Tyne, 6 each from Hull and Cardiff, 5 from Birmingham. Liverpool reported 6 deaths from whooping-cough, Manchester 4. Diphtheria claimed 6 victims at Liverpool, 3 at Hull. The 467 fatal cases of influenza outside London are scattered over 81 great towns: 48 were reported from Manchester, 10 from Nottingham, 16 each from Birmingham, Stockport, and Bradford, 15 from Blackburn, 14 from Leeds, 13 from Bolton, 12 each from Salford and Newport, 10 each from Croydon and Sheffield, 9 each from West Ham, Ilford, Liverpool, and Swansea, 8 from Hull, 7 each from Leyton, Stoke-on-Trent, and Cardiff, 6 each from Portsmouth, Plymouth, Walsall, and Middlesbrough.

The number of stillbirths notified during the week was 282 (corresponding to a rate of 41 per 1000 births), including 47 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. H. H. Babington is appointed *to Hood.*

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lts. R. W. Riddle and H. A. Lockhart to be Surg. Sub-Lts.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. C. E. W. S. Fawcett retires on ret. pay.

Maj. & Bt. Lt.-Col. (temp. Lt.-Col.) H. M. J. Perry to be Lt.-Col., vice Lt.-Col. Fawcett.

Maj. O. R. McEwen to be temp. Lt.-Col.

ARMY RESERVE OF OFFICERS.

Capt. J. E. Rusby resigns his commn., and retains the rank of Capt.

TERRITORIAL ARMY.

Lt. J. L. Turpie to be Capt.

RESERVE OF AIR FORCE OFFICERS.

Flight Lt. G. R. Nodwell relinquishes his commission on completion of service.

INDIAN MEDICAL SERVICE.

Lt.-Col. (Bt. Col.) T. G. F. Paterson to be Col.

Lt.-Col. F. C. Rogers retires.

COLONIAL MEDICAL SERVICE.

The following appointments have been made: Dr. A. L. McFarlane, Government Medical Officer, Jamaica; Dr. E. S. Adderley, Dr. H. T. Flannery, and Dr. J. Taylor, Medical Officers, Northern Rhodesia; Dr. E. Morris, Lady Medical Officer, Malayan Medical Service, and Dr. P. J. O'Shaughnessy, Medical Officer, Straits Settlement; Dr. J. M. Scott, Medical Officer, West African Medical Service; Dr. H. D. Weatherhead, Medical Officer, Antigua, to be Assistant Medical Officer, British Guiana.

LONDON HOMŒOPATHIC HOSPITAL.—Last year there were 1801 in-patients, and the 62,560 out-patient attendances were the largest but one on record. The Hospital Saving Association again increased its quota of patients to 502 in-patients and 3582 out-patients; the payments made on their behalf amounted to £4179. The new wing is to be opened in May by the Duke and Duchess of York, and further extensions are in progress.

CORRESPONDENCE

THE IRRADIATION OF SCHOOL-CHILDREN.

To the Editor of THE LANCET.

SIR,—The Committee on the Biological Action of Light, when first appointed by the Medical Research Council, was presided over by Sir William Bayliss and contained, in addition to Dr. Dale, Prof. Dreyer, and Captain Douglas, two clinicians, eminent light therapists, Dr. Sequeira and Sir Henry Gauvain—a sympathetic committee to work with.

After the death of Sir William Bayliss and the retirement to Kenya of Dr. Sequeira, three distinguished physicists, experts in the science but not the therapy of light, were added to the Committee, one of whom became its chairman; no medical expert in light treatment was added, and the Committee met at times at which Sir Henry Gauvain could not attend. The temperament of the Committee was changed. An official view had by this time crystallised out, which is repeated in the letters of Dr. Dale and Captain Douglas (THE LANCET, March 7th)—viz: "the equivalence of ultra-violet radiation to the administration of vitamin D." This dogma, so far as I know, is not accepted by any European, American, or British authority in artificial light treatment; how the Committee unguided by any such authority favoured this view the letter of my late colleagues shows.

As is clearly set out in the report of the Medical Research Council, 1929 (page 115), Dr. Dora Colebrook worked under direction of the Committee and not under me; but as set forth on page 43, Mr. Angus, a physicist, who has done excellent work in my department at the National Institute for Medical Research, "superintended the installation of arc lamps, used for the inquiry conducted by Dr. Colebrook at Willesden, and worked out scales of increasing doses."

Dr. Colebrook, I believe, consulted Dr. Bourdillon, who had just joined the department, for physicochemical work on vitamin D; she did not consult Dr. Eidinow, who had coöperated with me for five years as a voluntary worker, and was expert in light therapy. As a member of the Committee I agreed with the location of the school as proposed by Dr. Colebrook, and the details of the test.

When Dr. Colebrook was introduced to me as wanting to begin research work, and to study in particular light treatment, I arranged for her to attend in succession three clinics where such treatment had been initiated by me. The reports which I received from each of these clinics showed that there was disagreement between her valuation of light treatment and that of the medical officers. After this preliminary experience Dr. Colebrook carried out the tests at the Willesden school with an independence which should be the right of all researchers. I believe I was the only member of the Committee who visited the school and saw a test treatment in progress. I had then, and have now, *no criticism to make of* her method other than the possibility of an overdosage with ultra-violet rays. The arrangements at the school were excellent.

At the end of her inquiry an oral statement was made by Dr. Colebrook to the Committee, and the Committee decided that her report, which lay on the table, should be printed: (I concurred with this decision). The report had not been read, I believe, by any of the Committee. In all similar cases with which I am familiar such a report is put into type and circulated among the members of the Committee for comment before publication—an obvious comment on the negative result was "how remarkable that all the mothers of Willesden should give their children a sufficiency of vitamin D." Not only was the customary course not followed, but with the securing of this, her first essay in research, the Committee ended; it was never summoned to meet again. An official criticism of artificial light treatment was then published in the Medical Research Council's report, in which the negative evidence obtained by Dr. Colebrook was stressed and this was months before her report was published.

In the face of other evidence Dr. Colebrook's observations, however faithfully carried out, and however well designed by the Committee, needed to be tested by further trials in other schools and with other methods of light treatment. Dr. A. P. Laurie and I, therefore, carried out the Derby trial, reported in THE LANCET of Jan. 24th.

At the time when the Committee ceased to be summoned, Dr. Eidinow and I were obtaining evidence that rabbits are partially, and in some cases even wholly, protected from an otherwise lethal dose of staphylococcus by previous exposure to light, and that such protection was *not offered* by addition of vitamin D or A to their diet. The completion of this work was made difficult as the Council terminated their leave to Dr. Eidinow to work in my department.

Any criticisms made in the report of Dr. Laurie *and myself were directed merely towards* showing the need of future trials, and to question dogmatic official statements.

I am, Sir, yours faithfully,

LEONARD HILL,
Hon. Advisor in Research to the London Light
and Electrical Clinic.

March 9th, 1931.

SCHARLIEB MEMORIAL.

To the Editor of THE LANCET.

SIR,—The proposed memorial to Dame Mary Scharlieb is to take the form of a ward in the new gynæcological and obstetrical unit of the Royal Free Hospital, which will bear her name and be for ever associated with the work in which she was the great and beneficent pioneer. Mary Scharlieb was a student of the London School of Medicine for Women and the Royal Free Hospital from 1879–82. She was appointed gynæcologist to the hospital and was the first woman to be elected to the honorary visiting staff of this or any other general hospital in the kingdom. She filled the post with great distinction from 1902–08. She was lecturer in midwifery, 1887–1913, and president of the School from 1918–30. A year before her death on Nov. 21st, 1930, it was decided that her name should be attached to the new unit, and the "Mary Scharlieb Ward" will fittingly connect her own work for women with the hope and healing to be brought to future generations of patients.

We ask those who appreciate the work which Mary Scharlieb did for humanity, and in particular for motherhood, to help in building this ward. Subscriptions, including gifts from her family who earnestly desire the success of this memorial, already amount to £620, and further donations should be sent to the Lady Sybil Smith, hon. treasurer of the Appeal Fund, 8, Hunter-street, London, W.C.1.

We are, Sir, yours faithfully,

Signed for the Committee.
GERTRUDE KINNELL (Chairman).
A. LOUISE MCILROY (Convener of the Fund).
FLORENCE E. BARRETT.
ELIZABETH BOLTON.
JANET AITKEN.
WINIFRED C. CULLIS.

March 10th, 1931.

GASTRIC SYPHILIS.

To the Editor of THE LANCET.

SIR,—In an annotation in your issue of Feb. 14th you comment on a paper by Eusterman of the Mayo Clinic. Since Surgeon-Commander R. J. G. Parnell asks: "Is it justifiable to infer that a certain percentage of gastric ulcers is specific?" I would like to refer to a paper of mine on Organic Gastric Syphilis published in the *British Medical Journal* (Nov. 8th, 1930). In my paper the actual number of cases is small compared with the number referred to by Eusterman, but the data on which they were accepted as syphilitic were much more exacting. In that paper it was stated that I was of the Royal Infirmary, Edinburgh, but it should have been Royal Infirmary, Glasgow.

I am, Sir, yours faithfully,

Glasgow, March 5th, 1931. DAVID SMITH.

THE BRIGHTON RHEUMATISM CLINIC.

To the Editor of THE LANCET.

SIR,—This clinic was opened at the Public Health Offices, Brighton, on Feb. 26th, 1930. Treatment is entirely free, and consists of weekly injections of stock vaccines. The vaccines are prepared in the laboratory of Dr. Warren Crowe and are the same as those used at the Charterhouse Clinic.[1] During the first year 172 patients attended, suffering from rheumatoid arthritis, osteo-arthritis, fibrositis, lumbago, sciatica and other forms of chronic rheumatic disease. No case, however crippled, and several were unable to get up the stairs or out of their chairs, has been refused.

Of the 172 patients, 112 have so far been treated for six weeks or more, and of these the subsequent history has been followed up in 100 cases. The results have been tabulated under three headings: much better (including cured); definitely better; no better.

Class 1.	Class 2.	Class 3.	Total.
Much better (including cured).	Definitely better.	No better.	
39 (39 %)	51 (51 %)	10 (10 %)	100

Total of Classes 1 and 2 = 90 (90 %). Class 3 = 10 (10 %).

If the 12 whose subsequent history has not been followed up are included under the heading of "no better," and we have no reason for supposing that all 12 are no better, the following figures are obtained:—

Class 1.	Class 2.	Class 3.	Total.
Much better (including cured).	Definitely better.	No better.	
39 (35·5 %)	51 (45 %)	22 (19·5 %)	112

Total of Classes 1 and 2 = 90 (80·5 %). Class 3 = 22 (19·5 %).

The average age of those in Class 1 was 51 (the youngest was 20 and the oldest 87). In Class 2, 53·5 (youngest 17, oldest 75). In Class 3, 54·5 (youngest 31, oldest 68).

We are of the opinion that whatever the cause of rheumatism may be, "the secondary infection" is almost certainly due to the streptococcus and the staphylococcus.

The vaccines used consist of 157 strains of streptococci and two types of staphylococci. Of the latter one is *Staphylococcus albus*, which differs from the ordinary *Staphylococcus albus epidermidis* in its cultural characteristics when grown on Fleming's medium and in its reaction to milk. The other is a *Staphylococcus aureus* which differs from the more common *Staphylococcus aureus* also in its reaction to milk.

Routine carried out.—Previous experience had shown that the great majority of patients were sensitive to one or both of these vaccines and that a small alteration in the dosage might make all the difference between no reaction and a marked reaction. Therefore it became obvious that a definite routine must be adhered to, as subsequent doses must for the most part depend upon the patient's reaction to the previous dose.

Septic foci.—It was decided to pay no attention to septic foci, unless a glaring example, for instance, obvious pyorrhœa in a young person, presented itself. This was done for four reasons. Firstly, because it was considered as the result of previous experience that good results could be obtained even in the presence of septic foci. Secondly, the cost of bacteriological, radiological, and dental investigations rendered the search for foci prohibitive, especially having in mind the difficulty of deciding whether any particular focus was the specific one. Thirdly, it was considered that in the more severe cases septic foci were best left undisturbed until the patient's resistance had been sufficiently raised to enable the foci to be disturbed without running the risk of promoting a severe generalised reaction. And lastly, it was felt that if patients were to be subjected to all kinds of investigations they might be chary of presenting themselves for treatment and so defeat an end which was in view—namely, to show that there was an effective form of treatment within easy reach of the poor.

Details of treatment.—At the first treatment the patient was given 100,000 streptococci, and at the second 100,000 staphylococci. At the third and subsequent treatments the two vaccines were combined.

Of the first 87 patients so treated, it was found that after the third dose only ten were able to tolerate a dose as large as this without the production of a reaction—that is, a reaction which was considered excessive.

A number of cases could only tolerate doses of hundreds of organisms. These minute doses might suggest that the reaction was due to protein therapy, but if this is so the protein is specific and differs in the two vaccines. For it was found that one case reacted to the streptococcal vaccine and not to the staphylococcal and vice versa.

By separating the vaccines for the two initial doses the following facts arose. Of the 87 cases, 13 reacted to the initial dose of staphylococci only, and in all 13 the preponderating signs and symptoms were those of rheumatoid arthritis. Of those cases presenting no obvious signs of rheumatoid arthritis alone, six reacted only to the staphylococcus. Of 17 cases of mixed arthritis, 15 reacted more to the staphylococcus and two to the streptococcus. Of 52 whose rheumatism was mostly of the osteo-arthritic and fibrositic types, 11 reacted to the streptococcus only, and 41 reacted equally to both types of vaccine. Of these 41 only 11 reacted to neither of the two initial doses, and of these 11 only two have never definitely reacted to any dose up to two million, nevertheless the condition of both has considerably improved. We found that on the whole the arthritic type of case derived more benefit from the treatment than did the fibrositic.

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[1] See THE LANCET, 1930, ii., 1151.

In conclusion, we agree with those in charge of the Charterhouse Clinic that the method of treatment of the chronic rheumatic diseases by stock vaccine is one from which patients may be expected to derive benefit. We also agree with their suggestion that stock vaccine treatment could be applied on a large scale in the routine treatment of rheumatic patients, nor can we see why it should not meet with a success equal to that here recorded.

We are, Sir, yours faithfully,
F. E. GRAHAM-BONNALIE,
E. J. M. GALLAGHER,
V. E. CLAXTON.

Hove, Sussex, March 2nd, 1931.

NORD-SUD TOURS.

To the Editor of THE LANCET.

SIR,—By the merest chance I heard last spring of an International Medical Tour, organised by the Italian Government through the Italian State Railways and the E.N.I.T., and a brief note may be of interest to readers of THE LANCET. Similar tours are now organised in France and Spain, but the Italian tour is noteworthy in three particulars; the unique beauty of the country toured; the very small "busman's holiday" factor; and the remarkable comfort and great efficiency with which it is organised by Prof. Guido Ruata, of Rome.

The tour is not advertised, for it is limited to 15 members, of which the English-speaking group ca comprise 40 or 50, but it deserves to be more widely known in the profession. Last year the district toured included the central Dolomites, Lido of Venice, Grado, Abbazia, and Brioni, on the Adriatic and the trip ended at Salsomaggiore after 17 most interesting and amusing days. The eighth tour begins at Rome on Sept. 19th next, and includes the Naples Riviera, Capri, Sorrento, Amalfi, &c., and after visiting Taormina ends at Palermo on Oct. 2nd. The cost of the tour is a smaller item, as a rule, than the travel fares there and back. The writer, who has no interest in the tour beyond that of a participant had always sedulously shunned conducted tours of all kinds, and joined the seventh tour rather doubtfully, because it was warmly recommended by friend who had done it for five or six years, and i fitted neatly with a cancelled holiday plan.

Prof. Ruata tells me in reply to a letter, that h will be in London for the last week of March and wi give full details with pleasure to anyone interested through Messrs. Thos. Cook and Sons' head offic Berkeley-street, London, W.

I am, Sir, yours faithfully,
J. HENRY STORMONT.

Richmond-road, Worthing, March 9th, 1931.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

ARMY ESTIMATES.

In the House of Commons on Tuesday, March 10th, Mr. T. SHAW (Secretary of State for War) moved that the Speaker do leave the chair on the House going into Committee of Supply on the Army Estimates. He said that the net saving on this year's estimates amounted to £570,000. Last June all the commands were asked very carefully to consider every item of expenditure, and to economise wherever economy could be achieved without definite disservice to the Service. Recommendations have been received from the commands which had been acted upon as far as possible. There had been a very considerable increase during the past few months in the number of recruits who had come into the Army. Between October, 1929, and the end of September, 1930, 66,717 men offered themselves for the Army. Some 52 per cent. of these men could not be accepted owing to their bad physical condition, a fact which was matter for profound regret. Serious diseases that used to be very prevalent in the Army had diminished in a very marked degree. In 1913 the incidence of drunkenness was 426; in 1930 it was 107. As regarded barrack accommodation there had been a great accumulation for many years of necessary work to be done. He was afraid that the country would have to be in a much more prosperous position if they were to be able to take all the work in hand at once. The programme would have to be a gradual one, but by degrees these remnants of a past age were being removed.

EXPERIMENTS ON ANIMALS AT PORTON.

Some degree of interest had been aroused in the House in regard to Porton, which was an establishment which existed for studying the best methods o defence against poison gas. There were experiment on animals at Porton, but wild statements had bee made in the press as to what went on there. H assured the House that it was quite untrue that the was torture in the sense of violent pain being wantonl inflicted on animals. So far as he knew there wa no one concerned who would dream of inflictin unnecessary pain on any living thing. The questio which he had had to solve as the person responsib for ministerial policy was this: "Are you prepare if it is demonstrated to you that, by an experimen on an animal you might be able to devise a means saving enormous human suffering, to face suc experiment?" He answered that question in t affirmative. He was satisfied that everything wa done, so far as it could be done, to avoid sufferin and that when any animal showed signs of great pa it was at once painlessly destroyed. This was service which was common to the Navy and the A Force, as well as to the Army, but he took h full responsibility, as Secretary of State for War, f its continuation. He would do his best to see th it was continued on the same lines without t infliction of pain, but with the one object of savi human suffering, which might occur if the experimen were not carried out.

REMUNERATION OF OFFICERS IN THE R.A.M.C.

Major TRYON said that when they tried to enlist th healthiest people in the country, it would be a grea pity if they were not provided with the very be medical attention in the Army. There was, at presen a great shortage of medical officers, and he was gla that the Secretary for War viewed that position wi great concern.

Dr. HASTINGS said that there were two reasons for th lling off in professional interest in the Army Medical orps. One was that the Army now provided a very ealthy life, and the other was that the remuneration officers was small. Owing to the panel service, a ctor, by putting up a brass plate in an industrial ea could, in a year or two, make a better salary than e could obtain in the Army. The solution of the fficulty could only be found in the amalgamation the medical services of the three fighting forces d the medical services of the other State epartments into one comprehensive medical ser-ce. Referring to the Officers' Training Corps, r. Hastings said it was wrong to spend public oney on the military training of boys of the nder age of 15 in the public schools. The training as, in fact, compulsory. It was bad for the boys ho joined and equally bad for the boys who stood t. The boy who enjoyed strutting about in ilitary uniform would not necessarily make the best ficer. Boys trained in physics, chemistry, and ssibly even bacteriology and other sciences as well mathematics, would be of most use in the Army the future. The main objection to the O.T.C. as that it gave a boy an entirely wrong idea of the eaning of war.

C3 RECRUITS.

Mr. MACPHERSON said it was a sad comment on esent-day recruiting that 52 per cent. of the recruits ho offered themselves belonged to a C3 population. e House of Commons paid a great deal of attention the question of housing for the civil population. e had been astonished, however, to find how utterly adequate the barrack accommodation in the Army as at the present time. It might well be that the um conditions obtaining in barracks were to some tent responsible for the outbreak of spotted fever Aldershot. The Secretary of State for War had id that in view of the present financial stringency could only deal out a few pounds this year—less, fact, than last year, to improve existing barracks— t the right hon. gentleman admitted that the condi-ns of some barracks were antiquated and a danger the health of the troops. He would urge the cretary of State to divert some of the money at his sposal, and which might, owing to the rapid advance science be wasted, to improving the barrack accom-odation. Although he (Mr. Macpherson) was a vilian he happened to know a great deal about the al Army Medical Corps. The present condition that corps was extraordinary. He could not underand how a corps which had such a fine reputation, d which was so much sought after as a profession fore the war, should have become such a Cinderella. e was told that there was no longer any competition enter that service. About 50 vacancies were vertised every year, but sufficient applications uld not be got to fill those vacancies. That was an traordinary state of affairs. He was told that out 600 officers, 500 were majors and 100 were balterns. The 500 majors had to do subalterns' rk, which was unthinkable. Surely something must done to set this position right. If the health of the my was to be properly looked after they could not ve a discontented and chaotic corps of this kind. e was told that at present there was no chance of omotion; the pensions and allowances were iserable; and no special grants were made for ecialist services. Speaking as a civilian, he thought at the State could not allow this corps to remain in ch a chaotic condition.

REPLY TO THE DEBATE.

Mr. SANDERS (Financial Secretary to the War ffice), replying to the debate, said that he had taken e trouble to visit a number of the barracks to see eir general condition. He asked the House not to aggerate in regard to the general housing condition the soldiers. He had seen some most excellent uarters, especially for the married soldiers, in London. here were, it was true, a number of bad spots. the total amount which would be spent on build-gs in connexion with barracks, the War Office intended this year to spend £148,000 on married quarters alone, because they were most urgent. With regard to the scarcity of medical officers, there were 173 officers short compared with the proper establishment—namely, 823. The foreign establishment was kept up and the Indian establishment also; the shortage fell entirely on the home establishment. Everyone agreed that this shortage was a very serious matter, and several of his predecessors at the War Office had been concerned with the problem. It was a problem which affected not only the War Office, but the Admiralty and the Air Ministry. An Inter-Departmental Committee was being set up by the three Services with the object of finding some solution of the problem. He held the personal view that it was mainly a matter of money. It was a question of finding some new attraction to the Army which, in these days, appeared to consist mainly of money. That brought up other questions which they would have to take into consideration. If the rates of pay of the Army Medical Corps were increased, other Corps and departments and classes in the Army might also demand that they should be put on the same level. Were doctors to have special privileges? All those matters would have to be considered in the light of the needs of the three Services. He assured the House that this was a matter in which the Secretary for War was taking particular interest, and he hoped to be able to find a solution. The question had been raised as to whether specialist pay was given to the Royal Army Medical Corps. He was informed that there were 107 members of the R.A.M.C. who received specialist pay of 5s. per day extra.

The motion that the Speaker do leave the chair was agreed to, and the House went into Committee on the Army Estimates.

Lieut.-Colonel FREMANTLE said the question of providing medical officers for the Army was causing the gravest possible concern. It seemed to those who understood the position that they were facing headlong disaster.

HOUSE OF LORDS.

TUESDAY, MARCH 3RD.

YARMOUTH NAVAL HOSPITAL BILL.

Lord AMULREE (Secretary of State for Air), in moving the second reading of the Yarmouth Naval Hospital Bill, said the Royal Naval Hospital at Yarmouth had had a chequered history. It was completed in 1811 at a cost of £120,000 to receive naval personnel wounded during the war with France, but no naval wounded ever arrived. It was afterwards turned into a barracks. In 1814 it became a military lunatic asylum for ten years, and was subsequently used as a convalescent home for soldiers. In 1865 the Admiralty again claimed the building for the reception of naval lunatics. It had been continuously used by the Admiralty as a mental hospital since that date.

RECEPTION OF LUNATICS AT THE HOSPITAL.

A serious difficulty, however, had arisen. During the nineteenth century the Navy and Army dealt with their own lunatics in Service hospitals. The Lunacy Act, 1842, gave the Lunacy Commissioners the right of inspection of asylums specifically referred to as Royal naval and military asylums, and other asylums for the reception of insane persons, including the Royal Naval Hospital at Yarmouth. The 1842 Act was repealed by a further Act passed in 1845 and containing provisions which were deemed to include naval and military hospitals. In 1889 and 1890 further changes in the lunacy law were enacted. The Act of 1889 did not interfere with the provisions in the Act of 1845, but before it came into force it was repealed, along with other Acts, by the Act of 1890. The 1890 Act was a Consolidation Act. It repealed the Act of 1845 without making any specific provision for naval or military hospitals for the reception of insane persons. But nevertheless the

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, March 17th.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship. 8 P.M. for 8.30 P.M., PATHOLOGY. Annual General Meeting. Election of Officers and Council. Demonstrations: N. H. Schuster: Gumma of the Lung. C. L. Oakley: Mycosis Fungoides with Dissemination in Internal Organs. J. M. Ross: Tubercle Bacilli in Tissues. G. Hadfield: (*a*) Paraganglioma of the Suprarenal. (*b*) Squamous Metaplasia in Ligneous Thyroiditis. Communications: L. P. Garrod: The Comparative Efficiency of Antiseptics Used in Midwifery. J. E. McCartney and G. W. Moore: An Improved Technique for Mounting Specimens by the Slab Method.

Thursday.—5 P.M., DERMATOLOGY (Cases at 4 P.M.). Paper: Dr. G. H. Oriel (introduced by Dr. H. W. Barber): Some Experimental Observations on Eczema of Internal Origin, and other Allergic Conditions. Cases: Dr. S. E. Dore: Monilia of the Tongue, and Syphilis. Monilia of the Nails and Alopecia Areata. Dr. H. W. Barber: Sarcoid. Mr. F. C. Doble: Xeroderma Pigmentosum. Dr. Mary Horan (for Dr. O'Donovan): Melano-carcinoma Cutis. Dr. W. P. Grieve and Dr. E. Biddle (introduced by Dr. A. C. Roxburgh): Cutis Verticis Gyrata. Other cases will be shown.

Friday.—5 P.M., BALNEOLOGY AND CLIMATOLOGY. Discussion: Osteo-arthritis. Opener: Dr. W. Edgecombe. Discussion on Question of the Fusion with the Section of Electrotherapeutics. Members of the Section and their friends will dine together at the Welbeck Palace Hotel, Welbeck-street, London, W.1, at 7.30 P.M. 8 P.M., OBSTETRICS AND GYNÆCOLOGY. Members of the Section are invited by the Western Electric Company, Bush House, W.C.2, to witness their film of Cæsarean Section by DeLee. 8.30 P.M., ELECTROTHERAPEUTICS. Paper: Dr. Chalmers Watson: Radiation in Relation to Human and Animal Life. COMPARATIVE MEDICINE: EPIDEMIOLOGY AND STATE MEDICINE. Members of these Sections are specially invited to attend and take part in the discussion.

LONDON CLINICAL SOCIETY.

Tuesday March 17th.—8.15 P.M. (at the London Temperance Hospital), Clinical Evening.

HARVEIAN SOCIETY OF LONDON.

Thursday, March 19th.—8.30 P.M. (at 11, Chandos-street, W.), Sir Percy Sargent: The Romance of the Pituitary Gland (Harveian Lecture).

CHELSEA CLINICAL SOCIETY.

Tuesday, March 17th.—7.30 P.M. (at the Hotel Rembrandt, Thurloe-place, London, S.W.). Dinner, followed by a discussion on the Treatment of Menstrual Irregularities, to be opened by Mr. F. J. McCann.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

Thursday, March 19th.—8.15 P.M. (in the Royal Army Medical College, Grosvenor-road, Millbank), Laboratory Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

Monday, March 16th.—5 P.M., Mr. C. E. Shattock: Specimens Illustrating Affections of the Kidney.

Friday.—5 P.M., Sir Arthur Keith: The Anatomy and Nerve Supply of the Diaphragm.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

Tuesday, March 17th.—5 P.M., Dr. Macdonald Critchley: The Neurology of Old Age (Last Goulstonian Lecture).

Thursday.—5 P.M., Sir William Willcox: Toxic Jaundice (First Lumleian Lecture).

ROYAL INSTITUTION, 21, Albemarle-street, W.

Tuesday, March 17th.—5.15 P.M., Mr. C. D. Darlington: Cytological Theory of Heredity.

Thursday.—5.15 P.M., Prof. J. B. S. Haldane: Respiration.

Friday.—9 P.M., Prof. E. N. da C. Andrade: Sound, Sand, and Smoke.

Saturday.—3 P.M., Lord Rutherford: Alpha-rays.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Monday, March 16th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

Tuesday.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

Wednesday.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

Thursday.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

Friday.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases. Clinics. Operations.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, March 16th to Saturday, March 21st.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon. at 4 P.M., free lecture by Mr. A. E. Mortimer Woolf on Early Diagnosis of Diseases of Biliary Tracts.—METROPOLITAN (GENERAL) HOSPITAL, Kingsland-road, E.8. Wed., free demonstration of Radiology by Dr. G. T. Loughborough at 2 P.M.—ROYAL EYE HOSPITAL, St. George's-circus, S.E. Wed., free demonstration of ophthalmic cases by Mr. Myles Bickerton at 3 P.M.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology occupying mornings and afternoons.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland-street. Special Course in Orthopædics occupying mornings and afternoons.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, Special Course of lecture-demonstrations in Diseases of the Nervous System. Daily at 5 P.M.—ST. JOHN'S HOSPITAL, Leicester-square. Special Course in Dermatology. Every afternoon.—Further particulars from the Fellowship of Medicine.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith-road, W.

Monday, March 16th.—10 A.M., Gynæcological Ward Genito-Urinary Operations. Skin Department. 11 A.M. Surgical Ward Visit. 2 P.M., Surgical Ward Visit Operations. Medical, Surgical, Eye, and Gynæcological Out-patients.

Tuesday.—9.30 A.M., Operations. 10 A.M., Medical Ward Visit, Dental Department. 11 A.M., Throat Operations 11.30 A.M., Surgical Demonstration. 2 P.M., Operations Medical, Surgical, and Throat Out-patients.

Wednesday.—10 A.M., Medical Ward Visit, Children's Medical Out-patients. 2 P.M., Operations, Medical Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstrated.

Thursday.—10 A.M., Neurological Department. 11.30 A.M. Fracture Demonstration. 2 P.M., Medical, Surgical Genito-Urinary, and Eye Out-patients. 2.30 P.M. Operations.

Friday.—10 A.M., Medical Ward Visit, Dental Department Skin Department. 12 noon, Medical Lecture. 2 P.M. Operations, Medical, Surgical, and Throat Out-patients

Saturday.—9 A.M., Throat Operations. 10 A.M., Medical Ward Visit, Children's Medical Out-patients. Surgical Out-patients.

NATIONAL HOSPITAL, Queen-square, W.C.

Monday, March 16th.—12 noon, Dr. Greenfield: Patholo of Cerebral Tumours (II.). 2 P.M., Dr. Riddoc Out-patient Clinic. 3.30 P.M. Mr. Leslie Pato Vestibular Control of Ocular Movements.

Tuesday.—2 P.M., Dr. Walshe: Out-patient Clin 3.30 P.M., Dr. Grainger Stewart: Visual Disturban in Nervous Diseases.

Wednesday.—2 P.M., Dr. Martin: Out-patient Clinic.

Thursday.—2 P.M., Dr. Kinnier Wilson: Out-pati Clinic. 3.30 P.M., Dr. Gordon Holmes: Cere Tumours.

Friday.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M. Dr. Carmichael: Nervous Symptoms Associated w Blood Diseases.

KING'S COLLEGE HOSPITAL MEDICAL SCHOO Denmark-hill, S.E.

Thursday, March 19th.—9 P.M., Dr. Macdonald Critchle Migraine.

KING'S COLLEGE, Strand, W.C.

Monday, March 16th, and following Wednesday

Thursday.—5.30 P.M., Prof. K. S. Lashley (Chicag Problems in the Psychology of Behaviour.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Ag street, W.C.

Sunday, March 15th.—10.30 A.M., Mr. L. R. Brost Abdominal Emergencies. 11.45, Dr. A. A. W. Petr Early Mental Symptoms and their Treatment.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHO University street, W.C.

Monday, March 16th, and following Tuesday.—5.30 P Prof. B. Brouwer: (Amsterdam) Central Nerv System.

Tuesday.—5.15 P.M., Dr. C. H. Andrewes: Immunit Virus Diseases.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATI St. James's Hospital, Ouseley-road, Balham, S.W.

Tuesday March 17th.—4 P.M., Mr. L. Phillips: Ect Pregnancy and Abortion.

HAMPSTEAD GENERAL AND NORTH-WEST LOND HOSPITAL.

Wednesday, March 18th.—4 P.M., Dr. Saxby Wi Collapse Therapy in Pulmonary Disease with C matograph Demonstration.

CITY OF LONDON MATERNITY HOSPITAL, City-road,

Thursday, March 19th.—5 P.M., Dr. J. A. Willett: Ca and Treatment of Delay in the Second Stage.

CENTRAL LONDON THROAT NOSE, AND EAR H PITAL, Gray's Inn-road, W.C.

Friday, March 20th.—4 P.M., Mr. F. W. Watkyn-Thom Some Cases of Labyrinthitis.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

Tuesday, March 17th.—3.15 P.M. (at the Royal C Hospital), Dr. F. E. Saxby Willis: Asthma.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, March 17th.—5 P.M., Dr. G. B. Dowling: Mycotic Diseases.

THURSDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

THURSDAY, March 19th.—5.15 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. H. Crichton-Miller: Psychology of Suicide.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, March 17th.—4.15 P.M., Dr. D. E. Core: Early and Remediable Mental Disorder.

FRIDAY.—4.15 P.M., Mr. H. H. Rayner: Demonstration of Surgical Cases.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.

FRIDAY, March 20th.—3.30 P.M., Mr. Townrow: Vascular Lesions of the Ear, Nose, and Throat.

ST. MARY'S HOSPITALS, Manchester.

FRIDAY, March 20th.—4.15 P.M. (at the Whitworth-street West Hospital), Dr. Ward: Nephritis in Childhood.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, Elizabeth-street.

WEDNESDAY, March 18th.—4.30 P.M., Dr. C. Jacobs: Some Ocular Manifestations of General Diseases.

ANCOATS HOSPITAL, Manchester.

THURSDAY, March 19th.—11 A.M., Mr. F. H. Diggle: Clinical Demonstration. 4.15 P.M., Mr. H. Platt: Treatment of Fractures of the Upper Limb.

Appointments

JONES, T. S. L., M.B., Ch.B., has been appointed Resident Surgical Officer, Harlow Wood Orthopædic Hospital, Nottinghamshire.

MASSON, H. F., M.B., Ch.B. Edin., Certifying Surgeon under the Factory and Workshop Acts for the Dingwall District of the County of Ross.

London County Council: HALPERIN, R. (Miss), M.B., B.S. Lond., Assistant Medical Officer, Fulham Hospital; REYNOLDS, N. H. (Miss) M.B., B.S. Lond., Assistant Medical Officer, Queen Mary's Hospital, Carshalton; WILDE, J. F., M.B., B.Ch. Dub., Assistant Medical Officer, St. Peter's Hospital; LUMSDEN, K., M.B., Ch.B. Edin., Assistant Medical Officer, St. Charles' Hospital; YOUNG, J. M. M.B., Ch.B. Belf., Assistant Medical Officer, Brook Hospital; PURVES, M. S., M.B., B.S., Assistant Medical Officer, St. Olave's Hospital; PHILLIPS, A., M.R.C.S., L.R.C.P., Assistant Medical Officer, Bow Institution; FORD, R. K., M.D. Lond., Medical Superintendent, St. Olave's Hospital.

Vacancies

For further information refer to the advertisement columns.

Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.

Barrow-in-Furness, North Lonsdale Hospital.—H.S. £175.

Birmingham, Ear and Throat Hospital, Edmund-street.—H.S. At rate of £150.

Birmingham, Little Bromwich Hospital for Infectious Diseases.—Jun. Asst. M.O. £300.

Bootle General Hospital.—Sen. Res. M.O. £200. Also Jun. H.S. At rate of £150.

Bristol City and County Mental Hospital.—Third and Fourth Asst. M.O.'s. £450 and £350 respectively.

British Homœopathic Association, 43, Russell-square, W.C.—£100 Grant for Post-graduate Study of Homœopathy.

Cambridge, Addenbrooke's Hospital.—H.S. Also Res. Anæsthetist and Emergency Officer. All at rate of £130.

Cardiff Royal Infirmary.—Ophth. H.S. At rate of £75. Also Surgical H.S. and Gynæc. H.S. Each at rate of £50.

Carlisle, Cumberland Infirmary.—Second H.S. Also H.S. to Special Depts. Each at rate of £155.

Chelmsford, Essex, Administrative County of—Jun. Asst. County M.O.H., £500.

Chester Royal Infirmary.—H.S. £150.

Derby, Derbyshire Hospital for Women.—H.S. At rate of £150.

Doncaster, Royal Infirmary.—H.S. At rate of £175.

East Ham County Borough.—Asst. M.O. £600.

East Ham Memorial Hospital, E.—Hon. Ophthal. Surg.

Evelina Hospital for Children, Southwark, S.E.—Hon. Dental Surgeon. Also H.S. At rate of £120.

Gloucester, Gloucestershire Royal Infirmary, &c.—First H.S. At rate of £150.

Hackney Hospital, High-street, Homerton, E.—Asst. M.O. £350.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £100.

Hostel of St. Luke, 14, Fitzroy-square, W.—Res. M.O. At rate of £200.

Huddersfield, Royal Infirmary.—H.S. At rate of £150.

Hull Royal Infirmary.—H.S. to Ophth, Ear, Nose, and Throat Dept. At rate of £150.

Ilkley, Middleton-in-Wharfedale, Sanatorium.—Res. M.O. £250.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

King's Lynn, West Norfolk and King's Lynn Hospital.—Sen. H.S. and Jun. H.S. At rate of £175 and £125 respectively.

Lancaster, County Mental Hospital.—Asst. M.O. £500.

Leicester Royal Infirmary.—H.P. £125.

Lichfield, Staffs County Mental Hospital, Burntwood.—Third Asst. M.O. £400.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Liverpool Open Air Hospital for Children, Leasowe.—Jun. Res. M.O. £200.

Liverpool Royal Children's Hospital.—Two Res. H.S.'s for City Branch, Myrtle-street. Each at rate of £100.

Liverpool, Stanley Hospital.—H.P. and Two H.S.'s. All at rate of £100.

Liverpool and District Hospital for Diseases of the Heart.—Research Fellow. £200.

L.C.C.—Part-time District M.O. for City of London. £125.

London Hospital, E.—Sen. Clin. Asst. to Skin and Phototherapy Dept. £150.

London Light and Electrical Clinic, 42, Ranelagh-road, S.W.—Three Hon. Visiting Physicians.

Manchester, Ancoats Hospital.—Two H.S.'s. Each at rate of £100.

Manchester, Monsall Hospital for Infectious Diseases.—Jun. M.O. At rate of £350.

Manchester, Withington Hospital.—Asst. M.O. At rate of £350.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and Sen. H.S. Also Jun. H.P. and Jun. H.S., and Two Cas. O.'s All at rate of £100.

Miller General Hospital, Greenwich-road, S.E.—Cas. O. At rate of £150. Also H.P. and H.S. Each at rate of £125.

Newark General Hospital.—Res. H.S. £175.

Newcastle-on-Tyne, Royal Victoria Infirmary.—Sen. and Two Jun. M.O.'s At rate of £200 and £100 respectively Also H.P.'s and H.S.'s to Special Depts. All at rate of £50. Also Res. Anæsthetist. At rate of £100.

Nottingham General Hospital.—Cas. O. Also H.P. At rate of £200 and £150 respectively.

Nuneaton General Hospital.—H.S. At rate of £120.

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.

Portsmouth City Mental Hospital.—Jun. Asst. M.O. £350.

Preston, Sharoe-green Hospital, Fulwood.—Jun. Res. M.O. At rate of £104.

Preston and County of Lancaster Royal Infirmary.—H.S. and H.P. Each £150.

Prince of Wales's General Hospital, Tottenham, N.—Res. Sen. and Jun. H.P. and Special H.S. Each at rate of £120. Also Res. Jun. H.P. and Two Jun. H.S.'s. Each at rate of £90.

Reading, Royal Berkshire Hospital.—Cas. O. and Res. Anæsthetist. Each at rate of £150.

Richmond, Surrey, Royal Hospital.—Jun. H.S. At rate of £100.

Rotherham Hospital.—Cas. H.S. £120.

Royal Eye Hospital, St. George's-circus, S.E.—Hon. Asst. Surgeon. Also Clinical Assts.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. for Out-patient Dept. £150.

St. Helens Hospital, Lancs.—H.S. £200.

St. John's Hospital, Lewisham, S.E.—Hon. Physician and Hon. Surg.

St. Marylebone General Dispensary, 30, Marylebone-lane, W.—Hon. Surgeon to Ear, Nose, and Throat Dept.

Salford Royal Hospital.—Three H.S.'s. to Special Depts. Also Cas. H. S. All at rate of £125.

Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £126.

Sheffield Royal Infirmary.—Clin. Asst. to Med. Depts. £300.

Society of Apothecaries of London, Water-lane, Queen Victoria-street, E.C.—Examinerships.

Staffs, County Mental Hospital, Burntwood, near Lichfield.—Third Asst. M.O. £400.

Stalybridge, Borough of.—M.O.H., &c. £800.

Sutton, Surrey, New Sutton and Cheam Hospital.—Hon. Pathologist and Bacteriologist.

Swansea Hospital.—H.S. £150.

Taunton, Taunton and Somerset Hospital.—H.P. £100.

Tunbridge Wells and Counties General Hospital.—H.S. £160.

Wallasey Victoria Central Hospital.—Jun. H.S. At rate of £100.

West Bromwich and District General Hospital.—H.S. At rate of £200.

Western Skin Hospital, 44–46, Hampstead-road, N.W.—Hon. Asst. Physician.

Willesden General Hospital, N.W.—Hon. Clin. Asst. for Med. Out-patient Dept. Also H.P. £100.

CENTRAL LONDON OPHTHALMIC HOSPITAL.—On Thursday of last week Princess Marie Louise opened a new wing of this hospital in Judd-street, St. Pancras. The extension, which provides additional beds for private patients and more accommodation for the nursing staff, has cost £24,000. Private patients will pay fees ranging from 6 to 8 guineas a week. A scheme has been instituted whereby patients within a certain income limit can obtain private consultations for a moderate fee.

DR. KERSHAW COTTAGE HOSPITAL, ROYTON.—By his will, dated 1909, the late Dr. John Kershaw, formerly medical officer of Royton, near Oldham, bequeathed £50,000 for the provision of a hospital to be free and open to every inhabitant of the town. Accumulated interest has swollen the fund to £66,000, and the hospital was recently formally opened by Dr. Thomas Fawsitt. The building, which cost £15,000, contains 12 beds, and the balance of the money has been invested to provide the cost of maintenance.

NOTES, COMMENTS, AND ABSTRACTS

"REASONABLENESS" OR HOSPITALS AS FACTORIES.

BY A. R. FRIEL, M.D., F.R.C.S. IREL.

THE object of this paper is to point out some details in which the service which the medical profession renders to the public can be improved.

Our hospitals, at least the well-known ones, try to fulfil two objects—the cure of the sick, and the training of students. When we visit the out-patient department we see a hall thronged with people anxious to enter and pass through a bottle-neck—the doctor's consulting-room. In this room the same man tries to do two things—teach the students; and treat the sick. Now in some clinics abroad the professor in charge does little clinical work. He is available for reference in case of difficulty, but his principal work is teaching. For him a few cases are reserved for demonstration purposes. The *attempt* to do both things at the same time as a regular procedure—namely, to teach and to treat—adds to the difficulties of each. Division of labour and allocation of tasks is as necessary here for economic efficiency as in other spheres. The majority of patients suffer from common complaints. The treatment of these is well known in general outline and can be prescribed in detail, or applied by assistants. But such assistants should have responsibility. It is regrettable that so often in our hospitals doctors who have neither experience nor responsibility see the old patients and simply write "repeat mixture." To remedy this it seems reasonable that assistants in out-patient departments should hold a responsible position, and that it should be made worth their while to stay at the work. In other words they should be paid a salary.

The Hospital Regarded as an Industry.

Hospitals might with advantage be regarded as large industries where results are assessed in relation to the cost of attaining them. Every modern factory has a system of costings, and these are scrutinised carefully. In the factory the work carried out may be thought of as coming under one of the three headings—Policy, Organisation, and Technique. This division could also be applied to work in hospitals, and in all of them it is possible that improvements in our hospitals may be effected. A system of costings would make it plain in what particulars a change might with advantage be made. Costings should be estimated from the point of view of the patients, the hospitals, and the staff.

It would be well to begin by assessing the patient's industrial disability when he first came, and later when he was discharged from further treatment. The number of visits he had to pay, the distance he travelled, the money it cost him, and the time he spent coming and going and at the hospital should be taken into account.

On the part of the *hospital*, we have the overhead charges, the medicine given to the patient, the dressings used, the cost of certain special investigations, X ray and pathological, and of applications of special forms of treatment such as light, manipulation, electrical, heat, baths, &c.

The *staff* costings should not be merely money statements, but should include also time and energy expended by the doctor and by the hospital staff.

It is not suggested that a system of costings should be instituted in every hospital at once, but an investigation in a hospital of moderate size would furnish much information. Meanwhile the following suggestions might be considered.

Some Suggestions for Improved Efficiency.

The numbers of people who attend each section of the out-patient department can be averaged and times for their visits could therefore be spaced over the time spent by the staff. Thus the hours at which the staff attend would be divided into intervals, ¼ or ½ hours, and so many patients be given *written* appointments for each interval. It would mean much to them to be spared the weary hours of waiting which they have often to endure. The staff would benefit by knowing in advance how many patients they would have to see. It is useless to allow more people to attend than can be adequately treated. Poor people really appreciate arrangements to save their time and allow them to get on with their work. The lessening of energy expended trying to do the impossible and the increase of satisfaction in doing the work better, should enter into the costings on the side of the doctor.

There is a second bottle-neck for many patients after they have left the doctor—the dispensary. Here, again, there is a queue, and more waiting. Additional part-time dispensers and the enlarging of the dispensing department would speed up the work here.

Times are always hard for the poor, but sickness makes even people comfortably off poor. If time and energy can be saved during sickness, the poor man's home is less disorganised, his meals are not omitted, and his temptations to go elsewhere are not increased. Moreover, a saving of time and energy in the out-patient department would leave the medical staff with more time for research. We have to deal with the most complicated machine in the world—the human body—and we have to deal with it while the machine is running, which adds to our difficulty in treatment. Without economy of our available resources progress will be slow, but with capable management there is a hope of advance. A system of costings such as that outlined above would show how lines of policy may be altered with advantage, how organisation can be advanced, and technique in treatment perfected.

I feel confident that "reasonable" action on the above lines would help to solve the problem of the working of out-patient departments.

EXPERIMENTAL TRANSMISSION OF HUMAN LEPROSY.

Dr. H. C. de Souza Araujo has been continuousl engaged in the study of leprosy for the last 15 years not only in Brazil but in most of the countries afflicte with the disease. At a meeting of the Royal Societ of Tropical Medicine and Hygiene on Feb. 10th, h recounted in detail his work at the Instituto Oswald Cruz, Rio de Janeiro, on the experimental transmission of human leprosy to laboratory animals His inoculum consisted of florid human lepromat enucleated without skin and triturated with san and normal saline solution. This emulsion wa filtered through cotton-wool and its richness o bacillus content was microscopically observed; whe desirable the emulsion was diluted with norma saline solution. The animals were inoculated a soon as possible after preparation of the inoculum.

Sugai (1902–09) found the Japanese dancing mous the most suitable animal for experimental transmissio of human leprosy. Duval (1910–11) confirmed thi and showed also that white mice were susceptibl Kedrowsky (1914) infected white mice with a lepr culture of his own growth. Dr. Araujo was successf with white rats and guinea-pigs, and found monkey readily susceptible; but the animal of choice prove to be the white mouse. Injections of inoculum wer given intraperitoneally. In his necropsies, a sma series of control white mice showed no acid-fast bacill while 90 per cent. of those inoculated revealed acid fast bacilli in viscera or in exudates. Globies, to were seen in such quantity in the inoculated mic that they could not be regarded as having all bee merely absorbed from an inoculum and then redeposited here and there. If the globie, as Wade (1928) contends, signifies multiplication of the lepra bacillus, then in many of these mice the *Mycobacterium lepræ* had multiplied greatly; moreover, the longer the mouse lived after inoculation the more lepra-like were the lesions.

Sixty per cent. of the mice showed intra-abdominal nodules. These were either white, and resistant to pressure, containing masses of acid-fast bacilli, and resembling mycetoma grains; or grey, softer, friable, and adherent to mesentery or epiploon, containing less acid-fast bacilli, with a few cells or debris, being probably lymph glands invisible to naked eye in normal mice. Peripherally the liver showed granulomata composed of new connective tissue cells lying within a capsule. They were full of acid-fast bacilli. In the deeper substance of liver there was perivascular infiltration affecting the smaller blood-vessels and masses of acid-fast bacilli. The liver cells outside these lesions were quite normal.

In the experimental transmission of murine leprosy Muir, and Henderson and Landeman (1927) reported production of definite tumours. In 14 per cent. of Dr. Araujo's human-lepra inoculated mice there were small tumours adherent to inner abdominal walls and viscera. The lesions resembled fibroblastomata, or lymphocytoid tumours, and were rich in extra- or intra-cellular acid-fast bacilli. Their centres might show caseation, or spaces left by cholesterol, and M. Torres had pointed out that these lesions were not histologically like typical tuberculous follicles. If the spaces were really caused by cholesterol deposit and not by fat acids, the finding is important, for cholesterol is a powerful defensive agent against external intoxications and infections, and in active leprosy there is hypercholesterolæmia. Fourteen per cent. of the injected mice showed also minute abscesses in the viscera, sometimes appearing like miliary tuberculosis. Smears of these abscesses always disclosed acid-fast bacilli mostly in zoogleic form. Most important of all was the demonstration in one white mouse after inoculation with human lepra material, and in another inoculated with material from lepra-lesion (of human origin) in a mouse, of dermal nodules far from the site of inoculation and moreover accompanied by alopecia. This had not been previously recorded in any work on experimental transmission of leprosy. Rogers and Muir (1925) connected the usual absence of lepra lesions on the human scalp with its dense hairy texture, and this must be equally valid for the difficulty in transmitting human leprosy to the densely hair-covered bodies of laboratory animals. When alopecia occurred in a human leper it was regarded as the result of infection of the sub-follicular layer of skin, with destruction of hair follicles. If this be true then these mice were infected with human leprosy. Bayon (1911) postulated that multiplication of lepra bacilli could be claimed only if definite metastases were found in other organs, and not merely germs at site of injection. Dr. Araujo claimed that his own experimental results demonstrated that many of his injected mice fulfilled that postulate.

So much for this side of the medal with its apparent clear-cut picture of the human lepra infection, in truth, of white mice. But now for the reverse.

Dr. Araujo used lepra material from 20 human lepers. Some of this material unexpectedly gave entirely negative results when inoculated into the white mice, nor could any reason for this be detected. The ineffective material came from lesions in cases clinically and microscopically indistinguishable from those lesions in the cases which proved inoculably effective. Again, on the suggestion of Dr. Gomes de Faria, Dr. Araujo injected intraperitoneally three white mice with 1 c.cm. each of a fine suspension of carnauba wax (*Copernica cerifera*), and three others with 1 c.cm. each of a fine suspension of beeswax (*Apis melifera*). Eight days later one mouse from each group was killed. The carnauba-injected mouse showed no abnormality while the beeswax-injected one presented small white masses scattered over viscera; one wax mass in the liver forming a granuloma-like lesion. Another bees wax-injected mouse was then killed and here also were infra-hepatic white granules adhering to mesentery. Thirty, and 43 days later, respectively, the two other carnauba-wax-injected mice died: nothing abnormal was found in them. Forty-three days after injection the last remaining bees wax-injected mouse was killed. It showed only one white friable granule adherent to epiploon. Smears from organs in these wax-injected mice revealed no acid-fast elements.

Iwanow using lepra bacilli material heated for one hour at 120° C. had obtained as concordant results in guinea-pigs as when using fresh material. The presumably heat-killed bacilli were found still intact in the guinea-pig two and a half months after the injection.

Fraser and Fletcher (1914) found nodules containing acid-fast bacilli in guinea-pigs inoculated with killed culture of Kedrowsky's bacillus. For his part, Dr. Araujo had got negative results with human-lepra material heated by ethyl-alcohol; but treated with 10 per cent. formol the material produced once in three experiments, in white mice, subcutaneous nodules, without alopecia, at a distance from site of injection; and autopsy revealed acid-fast bacilli in the nodules and in liver and kidneys. In a white rat injected with the formol-treated material were found, four months later, three mesenteric granules identical with those produced by the material when fresh. E. Marchoux (1924) showed that *B. lepræ murium* was killed in 15 mins. at 60° C., and that staining methods could not distinguish between living and dead in these bacilli, though that could easily be determined by inoculation.

Finally, Dr. Araujo used human lepra emulsion boiled for one hour—a procedure which might readily be supposed lethal to lepra bacilli. Five white mice were inoculated with it. All came to autopsy 20 to 94 days later. They disclosed sometimes a few, sometimes great numbers of intact acid-fast bacilli, discrete, or in bundles, or in globies. Two of the mice presented nodules, containing acid-fast bacilli, in the abdominal cavity. One of four guinea-pigs inoculated with this boiled material presented on the seventeenth day one intra-abdominal nodule like that found by Iwanow. The nodule contained acid-fast bacilli.

Dr. Araujo declared that the results of his work had not resolved the great difficulties still enmeshing the problem of leprosy. He would draw no conclusions—rather he had reported concrete facts, with the comment, "Leprosy is really one of the most difficult subjects to study."

SODIUM AMYTAL AND THE DISEASED HEART.

Sodium amytal is regarded by some as a highly dangerous drug because of its effect on the lungs if the least overdose is administered. On the other hand, it is extolled in a recent paper[1] for its safety in patients with diseased hearts. The authors find that it has little direct effect on diseased heart muscle, and that as only slight circulatory changes are associated with its administration, and as the tone of the voluntary muscles is maintained, the drug is peculiarly valuable for inducing narcosis in heart disease patients. The case is related of amputation of the leg for gangrene in a man of 61, the subject of auricular fibrillation with myocardial degeneration. Rectal use of sodium amytal with novocain locally was a complete success. Another patient, who had myocarditis and angina pectoris, was relieved of an attack, which did not yield to half a grain of morphia, by an intravenous injection of 3 c.cm. of a 10 per cent. solution of sodium amytal. He went to sleep within three minutes of the injection and slept for 18 hours.

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[1] Bower, J. O., Burns, J. C., and Mengle, H. A. K.: Amer. Jour. Surg., 1930, x., 469.

INOCULATION OF INFANTS WITH B C G.

IN a communication to the Paris Academy of Medicine on Feb. 17th Dr. Weill-Hallé, who was the first to administer B C G to human beings, gave an account of follow-up investigations of 1029 infants inoculated with B C G during the seven-year period 1923–30. The infants lived in tuberculous surroundings in 359 cases, in suspect surroundings in 264 cases, and in healthy surroundings in 406 cases. Only 69, or 6·7 per cent., could not subsequently be traced. In 890 cases the children enjoyed good health, and of the 70 who had died only two were definitely known to have died of tuberculosis. They had remained, since birth, in contact with tuberculous parents, and had assuredly been infected before immunity could be established by B C G. Comparing the survival-rate of the B C G children with that of the general population of the same age, Dr. Weill-Hallé published the following Table :—

Age.	General population survivors.	B C G population survivors.
At birth	100	100
1 year	90·2	97·5
2 years	88·4	95·5
3 ,, ...	87·6	91·3
4 ,, ...	87·0	92·7
5 ,, ...	86·7	90·5
6 ,, ...	86·4	93·4
7 ,, ...	86·1	91·3

On its face value this Table confirms the claim that B C G inoculation, so far from provoking tuberculous casualties in the years immediately following inoculation, effects a considerable reduction of the general mortality. Dr. Weill-Hallé believes that there is a vastly greater risk of B C G degenerating or disappearing entirely in the human body than of regaining its original virulence. In view of the former possibilities, he is in favour of periodic re-examinations of the inoculated and their re-inoculation if necessary.

A MULTIPLE AVITAMINOSIS.

A DISEASE which is claimed to be a multiple food deficiency is described by E. Jenner Wright,[1] in Sierra Leone. The illness is characterised by lesions of the mucous membrane and skin, particularly at the muco-cutaneous junctions; disorders of the nervous system occur at the same time or subsequently. It is said that a cure can be effected by the addition of cod-liver oil and yeast to the diet, and hence the disease is deemed to be due to deficiency of both vitamins A and B. It is, however, defined as distinct from pellagra and beri-beri, though the differential diagnosis from early pellagra does not seem to be very distinct. There is, apparently, little doubt that the condition is of dietary origin, and though a similar syndrome has been observed elsewhere (*decoquée*, in the islands between Mauritius and Madagascar), this is the first time that the ætiology has been so interpreted. As is usual with a deficiency disease the poorest members of the population are affected and especially those who have been for some time out of work—facts which are so usual as to afford data of diagnostic value. The staple food is rice and cassava; dairy products are not available. A daily dose of 2 c.cm. of Radiostoleum (vitamins A and D) cures the mucous membrane condition, but it is not specifically stated that this happens apart from any other alteration in the diet. The mucous membrane lesions are possibly exaggerated and rendered atypical by the superimposition of a monilia infection; with such lesions, were their severity solely due to deficiency of vitamin A, the occurrence of cases showing night blindness and xerosis of the cornea would also be expected; but these are not described. The whole syndrome clears up on provision of a well-balanced diet, with the addition of cod-liver oil and yeast, but the curative diet needs closer investigation and analysis before an ascription of the symptoms to the lack of any special constituent of the B-vitamin complex can safely be made. Treatment with autoclaved yeast or autoclaved marmite might be attempted, and if these failed, pellagra, due to a deficiency of the comparatively heat-stable vitamin B_2 could be ruled out.

Multiple partial avitaminoses, such as this one, are probably all too common among native races the world over and are the abundant fruit of poverty; in the case of West Africa, however, it would seem possible for such a local product as red palm oil, which is an intensely rich source of vitamin A and is already consumed there to some extent, to be made widely available at a reasonable price.

JEWISH LAW AND AUTOPSIES.

THERE is a belief prevalent that Jewish law puts an obstacle in the way of holding post-mortem examinations, and we are informed that a ruling of the Court of the Chief Rabbi of the British Empire delivered in 1926 to the following effect still holds good.

Jewish law is against the mutilation of the body, or the handling of it by persons of another faith, inasmuch as it interferes with the prescribed rites appertaining to Jewish ritual. Jewish sentiment has naturally followed Jewish law and is very strongly against post-mortems.

There is, however, a rider to this ruling which runs: In cases, however, where the law of the land demands the holding of a post-mortem, Jewish law would acquiesce, and the relations would be advised in that sense.

OUR OLDEST SUBSCRIBER.

To the Editor of THE LANCET.

SIR,—Sir Temulji Nariman writes you to say that he was born on April 3rd, 1848, and not in 1858, as stated. As I was born on Jan. 4th, 1846, I am his senior by two years.

I am, Sir, yours faithfully,
JAMES GAIRDNER.
Crieff, March 10th, 1931.

IMPORTANT PEOPLE.[1]

A BOOK dealing with the appearance and habits of children who are in every case radiantly healthy has an appeal for all; the presence of health is the medical ideal, and much may be learned from studying perfection by those whose direct work generally lies among the imperfect. The important part that sick children play in society, as Dr. Still observed in his recent "History of Pædiatrics," has been observed as long as medicine has had a history, for the needs of small sufferers must throughout the ages have been the first care of parents. It is true that until the seventeenth century, the care of sick children was mainly recognised by subjecting the patients to rites founded on mysticism and a belief in magic, but when pædiatrics became founded on science the study made great strides. The importance of children from the medical point of view is now manifested more by the care displayed in the prevention of disease and the procuring of proper environment than in elaborate therapeutics. In particular to-day the period of childhood is the subject of scientific study. Miss Spender finds the word psychology tiresome from the lips of children's nurses, but its use is a proof that the desire of really understanding children is finding room in the nurses' make-up alongside with the intent to be kind and the need to be firm. Mr. Dowd's pencil drawings illustrate admirably the joy in life possessed by the healthy child, and especially the absorption of the child in the exploit of the moment.

A charming book.

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[1] The A and B Avitaminosis Disease of Sierra Leone. London: Harrison and Sons, Ltd., 44–47, St. Martin's-lane, W.C. 2. 1930. Also published in Dietetics in Warm Climates, by J. Neil Leitch. 1930. Harrison and Sons, Ltd. Pp. 367–383.

[1] Important People. Sketches by J. H. Dowd. Letterpress by Brenda Spender. London: Country Life, Ltd. New York: Charles Scribner's Sons. 76 pages, illustrations, and 42 pages text. 15*s*.

ADDRESSES AND ORIGINAL ARTICLES

THE TREATMENT OF LOBAR PNEUMONIA.*

BY LORD DAWSON OF PENN, P.C., G.C.V.O.,
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EXTRA PHYSICIAN TO THE LONDON HOSPITAL.

THE treatment of lobar pneumonia has produced for centuries concern and controversy which were justified by the prevalence and high mortality of the disease and still more by the way in which it would attack the healthy and robust on almost equal terms with the unhealthy and frail. About 70 years ago Wilson Fox, in "Reynolds's System of Medicine," wrote: "There is perhaps no subject in modern medicine which has been more earnestly discussed of late than the treatment of pneumonia. It has been the *champ de bataille* between the advocates on the one side of 'heroic' measures and the supporters of a 'rational' or 'expectant' treatment on the other."

The importance of this subject is brought home to us when it is recalled that 1 out of every 1300 of the population succumbs to the disease each year. The way in which it descends with tragic suddenness on men still on the rising tide of their usefulness and with the responsibilities of work and family on their shoulders, and in a few brief days destroys them, justifies Osler's designation of pneumonia as the "Captain of the men of death." On the other hand let it be admitted, in passing, that when life's work is done, pneumonia can be a merciful deliverer which saves the aged from the burdens of decrepitude and decay. But it is the former aspect which causes us concern because pneumonia makes heavy toll, not only on quantity, but quality of life.

Is it not true that the attitude of mind towards the treatment of pneumonia became changed from the time when it was established to be an infection by the pneumococcus, usually localised in lung and pleura. It is only necessary to recall cases within every doctor's experience which are doomed from the moment of invasion and crushed in 48 to 60 hours, or again epidemics of pneumonia, to realise that the study of the infection and man's resistance to its invasion are pre-eminent problems the elucidation of which would promote the prevention and cure of the disease.

One Sunday morning before the war I was called to an Eastern county. On reaching the house I found the husband dead, the wife with the rattle in her throat, and two children engaged in a race towards death—all from pneumonia. I realised better what the plague must have meant.

Think of diphtheria. Not so many years ago its ravages and its varied "cures" were the subjects of discussion, whereas to-day it is its specific therapy which mainly engages our attention. That in the case of pneumonia is the direction to look, and recent work justifies the hope that we can do so with increasing chances of success.

Specific Therapeutics.

The development of serum therapy followed the classification by Cole of pneumococci into four biological groups. Of these Nos. 1, 2, and 3 represent specific types, while No. 4 is a motley collection of many serological strains.

The serum contains protective substances similar to those which the patient's body is trying to produce and does produce in large numbers, according to Dochez, at the time of crisis, if the prognosis is favourable. The protective substances would appear to be antibacterial rather than antitoxic, since no toxin can be demonstrated as originating from the activities of the pneumococcus. The efficacy of the serum is commonly tested by its ability to protect mice from death when injected simultaneously with otherwise lethal doses of pneumococci.

The relative frequency of the different types and the severity of each vary in the same place at different times. There seems to be agreement that Group III. shows the smallest numbers and the greatest severity. Groups I. and II. together contain more than half the total number of cases—sometimes reaching 75 per cent.—and against them both there are effective antisera—notably against Group I.

The administration of these specific sera presented disadvantages which have retarded their general use. There was inevitable delay in typing the infection; for sputum is often absent in the early stages, culture of the blood not only consumes time but may be negative, and lung puncture again involves delay. Again the bulk of each intravenous injection was considerable, 100 c.cm. or more, and it had to be injected every eight hours for several doses. These objections were removed by the introduction of Felton's serum which is polyvalent (Groups I. and II.) and refined and so concentrated that a dose need not exceed 5 c.cm. for each 10,000 units. Moreover this serum is less liable to be followed by anaphylactic reactions.

Serum therapy has thus received renewed interest and trial. Since over half the cases are usually included in Groups I. and II., and Felton's serum is operative against both these groups, its administration can be commenced early and without waiting for the typing of the strain. Should the latter turn out to belong to either III. or IV. no harm though no good will have been done.

Before giving the serum the patient should be tested for hypersensitiveness (*a*) by dropping 2 drops undiluted serum into the eye. Within a quarter of an hour the conjunctiva will be injected if the patient is sensitive. (*b*) A more sensitive intradermal test with 10 per cent. of serum in normal saline gives a positive reaction in a susceptible patient. The hypodermic use of epinephrine affords protection in the event of anaphylactic reaction appearing.

The results of the use of Felton's serum are encouraging though not yet conclusive. Cecil found at the Bellevue Hospital that the mortality of Type 1 was reduced by over 30 per cent. and of Type 2 by 24 per cent. through the use of the serum in a total of 441 cases against a similar number of controls. Two recently published reports on the use and effects of this serum emanating from the Royal Infirmaries of Glasgow and Edinburgh are notable on account of their thoroughness and balanced judgments. Though both reports state that the numbers of their cases (Glasgow 57—Edinburgh 89) were too small for definite conclusions to be reached, favourable impressions were formed as to the worth of the serum.

There are grounds for thinking that, besides cutting down the mortality, in Types 1 and 2 the prompt use of Felton's serum cuts short the attack. Every clinician must often have said to himself, "If only this visitation could be shortened, even by one day!" And now we find that the average day of the crisis of the disease is brought nearer, to the sixth day, by the use of Felton's serum, in Type 1—a very considerable gain. And in Edinburgh they had a distinct impression that the severity of the disease, the rough-and-tumble of it, was less. I suggest that the time has come for a wider trial of Felton's serum, used promptly as soon as pneumonia is diagnosed, without waiting for the typing of the strain.

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* Opening address at a meeting of the Medical Society of London on March 9th.

Vaccine Therapy.—The use of vaccines has been given ample trial and received support by many workers, and my colleague Prof. W. H. Wynn proposes to deal with this aspect of the question. Perhaps I may give a personal experience. A patient badly stricken with pneumonia died ultimately of pneumococcic septicæmia. A vaccine prepared from his blood culture gave striking benefit in the treatment of many cases of pneumonia and when the vaccine was exhausted, I never met its like again.

The problems which face us in the treatment of pneumonia outside the acquirement of immunity are as follows.

Anoxæmia.

Blueness of lips and nails is an indication of oxygen-want. It may be a prominent and early feature.

The blocking of areas of alveoli with exudate must cut down oxygen intake and the output of CO_2 and its accompanying waste products. But this surely cannot be the entire explanation, for some very marked cyanosis is to be seen in severe cases of pneumonia and both early and ominously, before any consolidation has occurred, and indeed the patient will die and no large areas of consolidation will be apparent post mortem. This leads one to suggest that the cyanosis is in part due to such a damage of the alveolar endothelium by the pneumococci as to deteriorate its functional efficiency. In this way anoxæmia is linked with toxæmia, which clinically we know to be the case.

The "gassing" in the war first provoked the study of this question. Barcroft, Haldane, and others demonstrated by experiments with closed chambers the effects of varying degrees of oxygen deprivation. These effects were cyanosis, dyspnœa, raised pulse-rate, nausea, vomiting, and finally collapse, and resembled the symptoms of mountain sickness. By the analysis of arterial blood drawn by puncture, it was shown that in cases of pneumonia there was oxygen-want and sometimes to that same degree which in the experimental chambers would produce the above symptoms. Further, it was shown that the effective inhalation of 40 to 60 per cent. oxygen would raise the saturation of the latter in the arterial blood to nearly the normal point and alleviate the symptoms of anoxæmia.

The close association between the anoxæmia and the toxæmia explains why the alleviation of symptoms by oxygen therapy is sometimes partial and transient. In fact oxygen administration is a supportive rather than a curative measure, and its effect is well summed up by Barach after analysing the combined results of several observers as "beneficial to many and perhaps live-saving to a limited number." It may produce a marked improvement in the appearance and comfort of the patient, diminution of pulse- and respiration-rates, and less restlessness.

As to methods they must, to be efficient, secure an adequate oxygen saturation of the blood; they must also be practicable and not distressful to the patient. Various types of small oxygen wards have been designed and permit of good nursing. The richness in oxygen of the inspired air is regulated and a concentration up to 40 or 50 per cent. is adequate. It is not necessary to dwell on means which concern ventilation, temperature, and humidity.

Portable oxygen tents are being employed and by this means the patient can be supplied with air having a saturation of 40 to 50 per cent. of oxygen, and with means to secure the right temperature and humidity. The fitting of windows to these portable tents prevents the patient from feeling encompassed.

For routine treatment the nasal catheter (No. 10) is the best—adaptable under all conditions of hospital and home. By using calibrated-reducing valves the amount of oxygen delivered can be determined and regulated. If two litres per minute are delivered through the catheter the inspired air contains 30 per cent. of oxygen and the latter can be raised to 35 per cent. Masks for oxygen administration are impracticable because they distress the patient. The use of the funnel and tube does not give inspired air a higher oxygen value than 22 per cent. and is of little use—just an imposing ritual. Before leaving the consideration of oxygen therapy a word may be said on the inhalation of oxygen mixed with 5 per cent. CO_2. When the abdomen is distended and the bases of the lungs are apt to lose functional efficiency, the latter can be improved by a brief inhalation of this mixture.

All would agree that elimination should be promoted and it is interesting to note that liquor ammon. acetatis and potassic citrate, long established by experience, are being justified by the exacter knowledge of pharmacology.

Cardiac Tonics and Other Aids.

Watching the blood pressure is a helpful guide. If it falls, and especially the diastolic pressure, strychnine is valuable. As regards digitalis, I will ask this—do we in practice find that digitalis often helps the circulation in these infections? Is not its action wonderful within its sphere, but is that sphere much beyond cardiac insufficiency and auricular fibrillation?

The remaining headings of treatment which call for comment have the essential purpose of "helping the patient to bear it." There is nothing more important than alleviating strain—distress and pain. How often has a pneumonia victim been knocked to pieces by distress and want of repose! How often has a patient owed his life to the good luck of cough being absent! That is why opium—its alkaloids and allies—are beyond price. How right were the Easterns when they stamped their opium cakes with an exclamation of thanks to Allah.

Some patients who are fully conscious, besides being in bodily pain and distress, suffer anguish from thoughts of endangered employment, of families left unprovided for. If we can lighten that load, think of the gain. Sometimes by the use of alcohol, at other times by hypnotics, at other times by one of the morphia family, ease can be secured. The right selection is something well worth the learning.

The hesitancy to use morphia (and I use this word conveniently to include heroin, codeine, nepenthe, &c.) in pneumonia is fortunately passing, though *in some* quarters it still lingers. For pain and damping down ineffective cough it is essential. The cough which derives itself from a pneumonic area can do no good; that area is out of business anyhow and should be kept at rest. The fear that morphia in medicinal doses will depress the respiratory centre is a bogy.

On the other hand, the muscles of respiration become exhausted by their constant use in coughing. The only condition under which morphia may require to be withheld or used with great restraint is in a generalised bronchitis with an exudate blocking the tubes.

Hypnotics I will desist from mentioning by name. Where a patient is just restless and sleepless all will agree the hypnotic is better than morphia—very often a combination is good—just enough say of nepenthe to reduce cough and the hypnotic secures a good sleep. I think we are apt to forget that in acute infection chloral and bromide still hold an important place.

Alcohol has the advantage of being a food which requires no digestion. It lightens worries and helps repose and sleep. Its quality matters greatly. It is seldom wise to press it on those who dislike taking it. But, with alcoholics remember that "he that hath, to him shall be given."

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SAFER COLON SURGERY.

BY H. B. DEVINE, M.S. MELB., F.C.S.A.,

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IN the interests of patients it would be better if it were more generally recognised that the results of end-to-end or side-to-side anastomosis of the colon are uncertain, treacherous, and serious because, in the surgery of the colon, it is impossible to attain Listerian ideals. The truth apparently is, that no matter what kind of anastomosis or how perfect the surgeon's technique, consistent results, as in the mechanically similar operations of partial gastrectomy or enterectomy, cannot be expected. This is due to the fact that there is an entirely different set of circumstances present: the colon has a poor blood-supply, the vessels being sparse, weak-walled, and easily compressed by sutures; the bowel content is highly septic and infection is very likely to spread along the sutures to the peritoneum, even if these do not penetrate the mucous membrane.

Reliable statistics of the mortality after partial colectomy by the usual methods are difficult to obtain. From inquiries I know that the results of the surgeon of average ability are not good, and are not as a rule published; even the published results show death-rates of 25·9 and 14·3 per cent.,[1] 35 per cent.,[2] and 23 per cent.[3] My own experience has been disquieting notwithstanding extreme care in technique, combined with some form of proximal fistula. I have lost patients who were good risks, and even among those who recovered there were some anxious convalescences.

The primary cause of post-operative complications was always infection, which gave rise either to a mild local peritonitis with mild obstruction and occasionally a fistula; or to a spreading peritonitis which wrecked the anastomosis and resulted in the death of the patient. This infection was not always caused by peritoneal soiling at the time of the operation; from its time incidence and insidious onset it was obvious that it was an infection through the anastomosis, probably through the suture material in the thin colon wall or through devitalised tissue in the anastomotic edges. The operative mortality of ileocolectomy is not so great as that of partial colectomy because the region is perhaps not so septic; nevertheless the operation because of its colonic nature cannot be depended upon, especially in the debilitated, to give consistent results free from anxiety.

In an article published 25 years ago Paul,[3] of Liverpool, described his operation and described his results.[4] Out of 18 patients operated on for carcinoma of the colon, 17 lived; the one patient who died was not operated on by his method. Paul admitted that his operation was not a pleasant one for the patient and that the cure was long delayed. Notwithstanding these remarkably successful results this operation did not become popular with surgeons because it entailed fæcal fistula with its unpleasant aura, its uncertain closure, and its secondary operations; but as time has gradually demonstrated the dangers of the sutured colon anastomosis, and as patients have lost dislike to an artificial anus, now better controlled, surgeons have more and more employed operations embodying the principles of Paul.

Paul's Operation Modified.

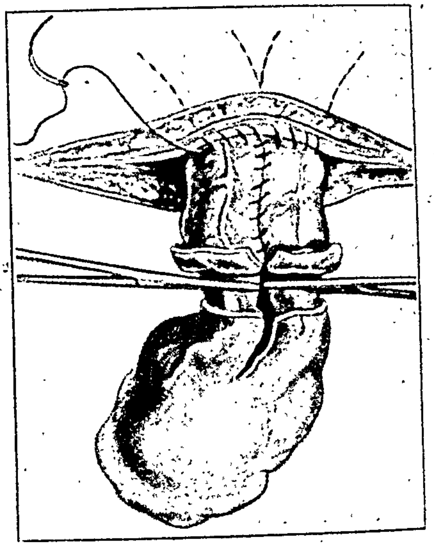
Five years ago, with a view to minimising, perhaps avoiding, the objectionable side of Paul's operation, I devised a modification.[5] This modification had for its objective the early closure of the fæcal fistula and the avoidance of set "secondary operations" in order to make the operation, for practical purposes, a one-stage procedure. My results were good. Out of 12 very debilitated patients only one died and she was a most unjustifiable risk, being almost moribund before the operation.[5] The strain on the patients was very little both morally and physically, for it was possible to close the fistula very early in the convalescence while the patient was in bed and at no time to have much fæcal discharge on the dressings.

In the light of this experience and with further improvements in my technique I now feel justified in employing this procedure as a routine operation for colon resection, except where it is anatomically impossible, and latterly its use has been extended more frequently to ileocolectomy.

The main principle on which the safety of Paul's operation depends is that an intestinal anastomosis is accomplished without any possibility of peritoneal soiling at the time of the operation, and with very little probability of post-operative peritoneal infection because there are no stitch-holes or areas of doubtful nutrition; the unnecessarily large, unavoidable artificial anus, contiguous to the anastomosis is certainly an additional element of safety. Paul used a straight-edged enterotome to make the anastomosis. This made narrow anastomotic junctions with a precarious union. It was therefore necessary to wait some time for firm adhesions to form between the intestinal segments before it could be applied. My endeavour has been to make an early but a safe anastomosis by using an enterotome designed to make its own adhesions, and anastomotic junctions which would be broad and safe. Then having obtained this, the second objective has been to avoid the unnecessarily large artificial anus, comprising the open ends of both segments of bowel; and to create instead a fistula only large enough to subserve the required function, that is, an opening which would function only for a short time like a cæcostomy. Having attained these two essentials I planned to close this now manageable fistula at the end of the first ten days after its purpose had been fulfilled by a piece-meal method of repair, which could be carried out in the patient's bed as part of the daily dressing. The early anastomosis was made by applying in the first 24 hours an enterotome with very generously bevelled edges, and a narrow almost cutting face (Fig. 3, c), the bevelled edges enabling a wide and graduated pressure to be applied and producing the broad anastomotic junctions. In from 36 to 48 hours, by extra pressure, the narrow cutting face of the clamp is brought into play, the gangrenous tissue cut through, and the lumens of the adjacent bowel connected in from three to four days.

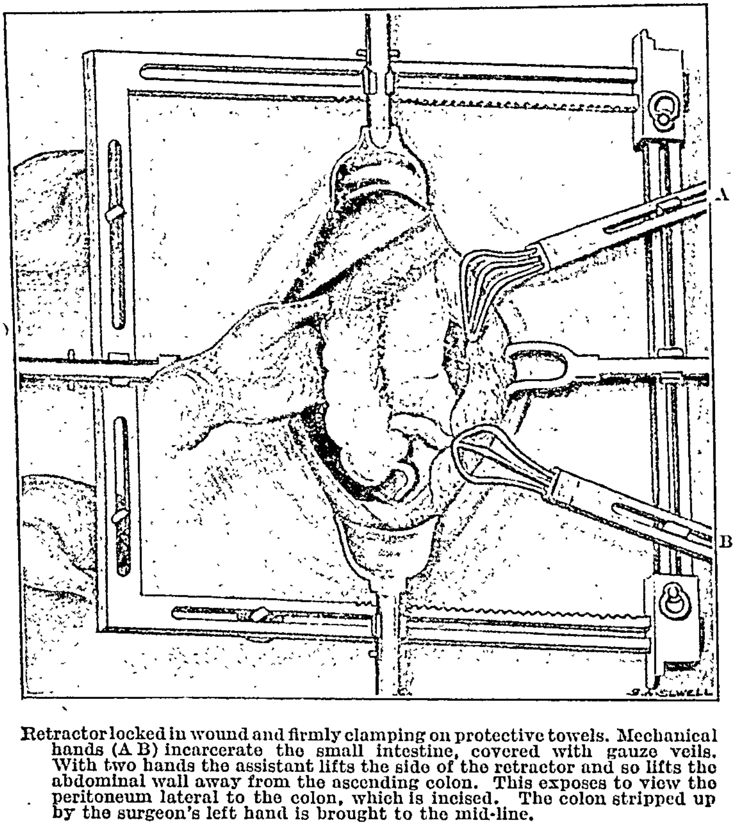
The art of controlling the size of the fistula depends, firstly, on leaving outside the abdominal wall, when the diseased segment is being amputated, enough of the ends of the intestinal segments to permit a closure; and secondly, on getting rid of the redundancy by suturing the whole of the non-functioning end of the distal segment and part of the end of the proximal segment in the first 48 hours before the chronic inflammation, which is part of the process of natural healing, makes the intestinal wall too rigid to suture. In this way immediate and certain union is obtained and a small manageable fistula, like a cæcostomy, is left. After eight or ten days this fistula can be closed on the following principles: the gut is painless, so it is sutured, without the administration of an anæsthetic, in the patient's bed as part of the daily dressing; the bowel is sutured early—that is, the moment that the fistula ceases to be of service—while the intestinal wall is still somewhat flexible; eversion or prolapse of the mucous membrane interferes with, or even prevents, the healing of intestinal wounds, so the mucous membrane is freely amputated. A clear appreciation of this latter principle is necessary when dealing with wounds of hollow viscera. In hollow organs, the circular and longitudinal muscle are always in a state of plastic tone in order that the organ may keep up a peristole a contraction round the contents o the organ. The mucous membran is redundant, uncontractile, an loosely attached to the muscl layer; this is necessary so tha it can adapt itself to the differen degrees of distension and contractio of the organ. When a wound made in an organ and the muscl fibres divided, they retract, an the mucous membrane must the evert or even prolapse. The prolaps necessarily must be greater whe the wound is big or the muscle pathologically hypertrophied; I hav seen a very hypertrophied stomac when a large opening was ma in it, turn completely inside ou This eversion or prolapse oppos the mucous membrane surfaces; th delays the natural healing of sma intestinal wounds, and makes practi ally impossible that of large wound The management of the mucous mem brane is therefore very important. is, I think, a lack of the appreciatio

FIG. 2.



Segments of bowel are sutured together and to the parietal peritoneum, and the sero-muscular layer is turned back. The clamps are applied to the mucous membrane.

FIG. 1.



Retractor locked in wound and firmly clamping on protective towels. Mechanical hands (A B) incarcerate the small intestine, covered with gauze veils. With two hands the assistant lifts the side of the retractor and so lifts the abdominal wall away from the ascending colon. This exposes to view the peritoneum lateral to the colon, which is incised. The colon stripped up by the surgeon's left hand is brought to the mid-line.

of the importance of this principle which has led to the failures and multiple operations in vesicovaginal fistula.

The practical application of this principle in the closing of the residual fistula is as follows: (1) much more mucous membrane than muscle coat is cut away, when the diseased segment of bowel is amputated; (2) the size of the opening is limited as early as possible, by partial suture of the cut ends, in order to prevent ectropion of the mucous membrane; (3) the mucous membrane is extensively dissected from the muscle coat and amputated before each secondary suturing.

PARTIAL COLECTOMY.

The actual steps of partial colectomy, as I now perform it, are as follows:—

(1) A paramedian incision is made in the lower part of the abdomen.

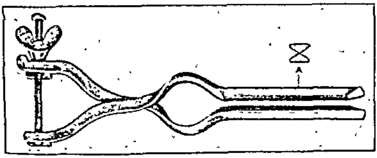
(2) Protective towels made of rubber covered with gauze are placed over the edges of the wound, well on to the peritoneum of the anterior abdominal wall. These are firmly clamped on by a special four-bladed retractor.[6] This retractor is locked firmly into the abdominal wound and gives the operator control of the abdominal wall, enabling him to lift it away from the viscera, create an actual body-cavity out of a potential one, and expose and incise under sight the peritoneum lateral to either the right or left colon. This retractor enables a growth in any part of the colon to be dealt with easily from a mid-line incision (Fig. 1).

(3) With the gloved hand the diseased segment of bowel, with its mesenteric attachment, is stripped up from the posterior abdominal wall and brought to the mid-line.

(4) The mesentery is divided and ligated; this allows further evisceration of the bowel.

(5) By experiment the abdominal region is found in which the mobilised loop will allow the most efficient resection of the lesion; if necessary a counter opening is made through which the loop will eventually be brought.

FIG. 3, C.



Enterotome with bevelled edges. (Allen and Hanbury.) Cross section at A.

(6) The segments of bowel lying adjacent to each other which are to form the anastomosis are sutured together (Fig. 2).

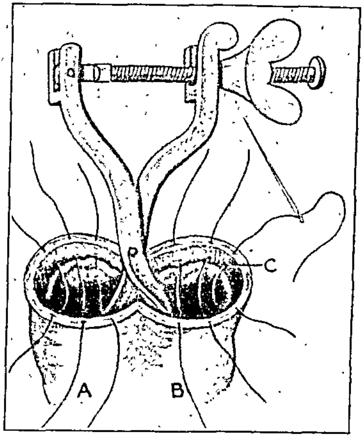
(7) Any deperitonealised areas on the posterior abdominal wall are covered.

(8) The abdominal wound is closed; the protruding bowel is pinched a little in the closing, in order to direct the intestinal contents through the anastomosis when it will be formed; this minimises the amount of fæces on the dressings.

(8) The diseased segment may be removed at once or in 24 hours. There is very little disadvantage in removing it at once, for the peritoneal cavity has been carefully closed. In removing this segment the seromuscular layer is turned down as a cuff, the mucous membrane drawn out, and clamped as proximally as possible.

(9) In less than 24 hours the clamps are removed, the spur-clamp applied (Fig. 3, C), and the ends of the bowel so sutured that the fistula will be only large enough to subserve the necessary function (Fig. 3, D).

FIG. 3.

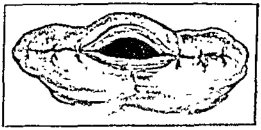


A = distal segment. B = proximal segment. Sutures introduced ready to be tied. C = area inside bowel denuded of mucous membrane.

(10) The pressure on the spur-clamp is gradually increased till finally, in from three to four days, the lumens are united.

Six or seven days are now allowed to elapse so as to allow firm union of the anastomotic junctions. After this the artificial anus is no longer required and an attempt is made to close it. A few atraumatic needles with No. 1 catgut, gloves, a very sharp chisel-edged dissecting scissors, and other necessary instruments are left in a sterile tray beside the patient's bed. At a routine inspection of the wound the mucous membrane is dissected from the muscle coat with the scissors and amputated. The opening is then closed with interrupted sutures. Three or four days later one or two of these sutures will be found to have cut out. It will then be necessary to repeat the resection and suture.

FIG. 3, D.



Ends of bowel after removal of enterotome.

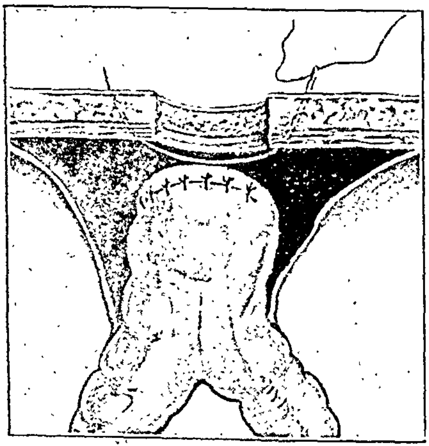
Towards the end of the fourth week, from the suturing and shrinking associated with natural healing, most of the redundancy of the bowel will be found to have disappeared and the fistula will be closed or there will be a small opening emitting only air. The patient can now be allowed up. In two or three weeks, when most of the inflammatory infiltration of the wound has disappeared, under novocain anæsthesia the bowel stump is dissected out, a few sutures put in any small fistula that may be present, and the whole dropped beneath the muscles; these are very loosely approximated with a few silkworm gut sutures (Fig. 5).

ILEOCOLECTOMY.

Ileocolectomy by the method published[5] had certain disadvantages; the ileal contents being fluid and more irritating than those of the colon caused excoriation of the abdominal wall; the continual discharge of fluid fæces was very unpleasant for the patient. But since learning to manage the fistula better, one is able now to do an ileocolectomy by this method with very little inconvenience to the patient. The following history exemplifies this:

A patient suffering from a large ileocæcal carcinoma was emaciated and anæmic. Notwithstanding all kinds of preparatory treatment, she was a very bad surgical risk and I am sure she would have died if she had been operated on by the ordinary methods. In this particular instance, the departure from the usual technique was: the intra-abdominal suture uniting the intestinal segments was made longer and a longer spur-clamp was used; the whole of the end of the colon and a good part of the ileum were closed immediately the loop of diseased intestine was removed; the blades of the enterotome were squeezed through small separate openings near the ends of the cut bowel; the abdominal wall was made to slightly constrict the protruding bowel; the ileal opening was made just large enough for the liquid ileal discharge to function; in 36 hours the pressure on the clamp was increased in order to connect the lumens (Fig. 5). On the fourth day, after a weak aperient, the patient's bowels acted naturally. At no time was there any fæces on the dressings, although the ileal fistula was open and plenty of gas escaped. No difficulty was experienced in closing the residual fistula in the usual way.

FIG. 4.



Extra-abdominal part dissected free and dropped back with closure of abdominal parietes.

This case has demonstrated to us that it is possible to make an ileocolectomy after the principle of Paul and to get no fæcal loss; much in the same way as many cæcostomies, in the absence of obstruction, discharge flatus but not fæces. It may not be possible to repeat this experience as a routine, but it certainly demonstrates a principle, which should be exploited.

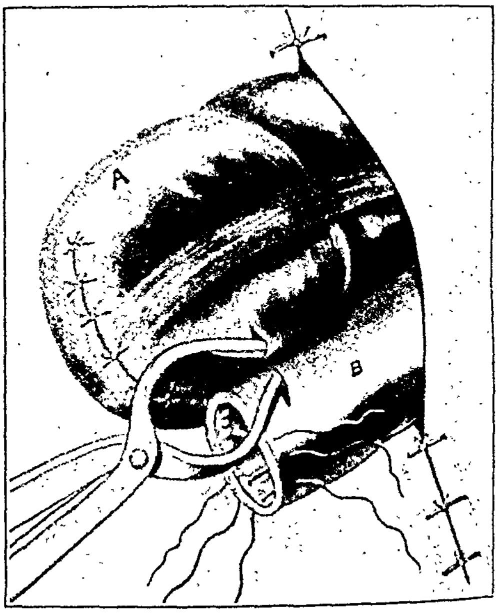
Application and Results.

The method has its special application in two classes of patients:—

(1) In the type of patient who has advanced operable carcinoma with no secondaries; who is so extremely devitalised that intestinal union is unlikely and who would not survive much operative interference. Such an instance is the following:

A man, aged 54, suffering from a very large ileocæcal carcinoma was so emaciated and enfeebled that we did not even entertain the thought of exploring the abdomen. The anæsthetist gave as his opinion that he would probably not tolerate an anæsthetic for exploration. To our surprise, at the exploration, we found that the growth was operable. Ten minutes sufficed to strip up the diseased segment of colon from the posterior abdominal wall and fix it as a loop through the loosely sutured abdominal wound. The remainder of the operation—the plastic side of it—was done in the patient's bed without even local anæsthesia. This man left the hospital in seven weeks with a completely healed wound. He is now, five years later, the captain of his bowling club.

FIG. 5.



Ileocolectomy: A = protruding end of transverse colon closed with sutures. B = end of ileum partially closed. The blades of the clamp are shown inserted into two small openings made near the ends of the bowel. Subsequent experience has shown that this is not an advantage.

(2) In cases where a long tedious dissection for freeing an extensive growth is necessary, and the patient cannot safely survive the extra time which the aseptic technique of an intra-abdominal colon anastomosis requires. The method allows the incidence of the operation to be put on a careful dissection of the growth. The following exemplifies this aspect:

Twelve months previously a patient had been operated on for a carcinoma of the hepatic flexure of the colon which was then considered inoperable. As the patient had remained in fair health I was subsequently asked to make a special attempt to remove it, and spent two hours on a very extensive careful dissection. Time, of course, was necessary, and that was all required for the dissection; no time could be spared for an anastomosis. Therefore, after the diseased segment was removed, the ends of the bowel were left in the way described. The operation was subsequently completed in bed.

That there is no great danger in making an early anastomosis in the way that we have indicated is proved by the successful cases to which I have referred. In addition to these, Mr. E. T. C. Milligan, of London,[7] informs me that he has operated successfully on ten patients by this method and he makes the remark that in contrast to the usual methods of resection and anastomosis, there is an absence of anxiety and but very little strain on the patient. In his last patient the bowels acted naturally on the fourth day after removal of a carcinoma of the sigmoid colon. In another the fistula and abdominal wound were healed in three weeks. The operation has been performed successfully on patients with distended large gut. When we compare the almost symptomless convalescences and negligible mortality of very debilitated patients operated on by this method, with the stormy convalescences and unnegligible mortality of the sthenic group of patients operated on by the ordinary methods, we are forced to two conclusions: first, that many of the patients in the sthenic group would have been alive if they had been operated on by this method; secondly, that even if it is still open to debate whether this method or one based on similar principles should be the routine operation of a first-class surgeon, there appears to be no doubt that this method should be the operation of choice for a surgeon of average ability.

CONCLUSION.

Partial colectomy after Paul is much the safest method, but it is encumbered with penalties to the patient. The methods here advocated, although exacting on the time and ingenuity of the surgeon, enable him to close the fistula very early and almost to put it on a basis equivalent to a cæcostomy. This abolishes the disabilities to the patient and places the operation on the same plane of safety as gastric or small-intestinal operations, extends its use to ileocolectomy, and brings it within the realm of a routine operation for resection of the colon.

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THE USE OF CONTACT GLASSES.

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IN a recent paper in THE LANCET (1930, ii., 1067) Mr. A. Rugg-Gunn discusses the use of contact glasses, but there are several points on which I do not agree with him. He does not make it clear whether his statements are derived from his own experience or from the literature. I presume that he has only one set of contact glasses, for he only speaks of one, but in my opinion the minimum for uni-ocular examination is a set of 5–11 mm., each varying from the other by about 1 mm. Naturally this set will not meet every case, and the glasses are therefore whetted to give a plus or minus effect. From this set it is not desirable to attempt to produce a correction of more than four dioptres, since the modification necessary in the glass supplied sometimes makes it so different from the trial glass that it cannot be worn. For high corrections, therefore, it is better to work with a second set in which the radius varies by 0·5 mm. With this set the subsequent correction on the trial glass need only be 1 or 2 dioptres. Best of all, however, is to have a set of glasses progressing by 0·25 mm.—e.g., 5·0, 5·25, 5·5, 5·75, 6, and so on up to 11. This would almost abolish secondary corrections and would make the glass supplied almost the same as the trial glass.

Moreover, the scleral radius—i.e., the radius of the contact ring—is not sufficiently varied in a series running 11, 12, and 13 mm. It is sometimes possible to see that a glass with a radius of 11 mm. is too tight, while one of 12 mm. admits air because it is too flat. In a case like this, glasses with a contact radius of 11·5, 12·5 mm. are needed. Since most people need binocular vision, the set of glasses should be in duplicate, for the patient cannot decide from a uni-ocular examination whether or not he can wear the glasses. This makes the apparatus somewhat complicated, but the greater the choice of glass the fewer the number of failures.

It is of considerable value for the patients to be given, immediately after the examination, the identical glass which they selected; this has psychological value, as patients are often unable to get the glass in and out when it comes to them from the makers after a few days, even though it is, in fact, a perfect fit.

The apparatus becomes even more complicated when the ordinary contact glasses are combined with a brown tint to protect the eye from snow glare. This should cover the optical part and have a diameter of 10–12 mm. and a light-absorption value of 25, 50, or even 75 per cent. Sportsmen appreciate this very much, but it has also a cosmetic value for which many patients are thankful.

Adjusting the Glass.

In removing the glass the physician must not use an ivory spatula or even a finger-nail, as the thin edge—only 0·3 mm.—is easily injured. The glass must be put in and out with a small rubber sucker. Sometimes when the patient has worn the glass for several hours it adheres very firmly and is difficult to remove. The sucker must then be pressed down firmly on the middle of the cornea so as to drive out as much air as possible, and the patient then moves his eye from left to right. Physiological saline (Ringer's solution) is better than sugar solution.

If all these points are remembered, failures are very rare. There will always be some people whose eyes are so shaped that a spherical glass cannot adhere to them, and there will always be sensitive patients who cannot get accustomed to wearing this uncomfortable fitting on the most delicate surface in the body.

All the writers on contact glasses in the past have used a fixed scleral radius of 12 mm., and that is the reason why experiments on this form of correction—which have been made for the last 100 years—have hitherto all failed. It is not the optics of the method that constitute the difficulty, but the application of the glass to the cornea, which demands not only correct scleral radius but also a good relation to the optical dimensions. A glass that is relatively flat compared with the natural curve of the cornea must lie very lightly on the middle of the cornea while a glass that is more highly curved than the natural cornea must touch it equally gently around its circumference. Therefore it is of the utmost importance to adapt the glass accurately to the sclera.

Indications for Contact Glasses.

Contact glasses are suitable for a number of conditions besides the various forms of ametropia.

It is now possible to manufacture a glass which is coloured brown in the middle for a diameter of 10 to 13 mm. and has a light absorption value of 25, 50, or 75 per cent. This is the best possible protection to the eye against climatic conditions such as storms, dust, cold, and heat. Children with ophthalmia like these glasses and do well with them. In my experience these lenses also constitute the best treatment for colour-blindness and its photophobia, improving the vision and reducing the nystagmus.

The contact glass is also valuable for serpentine ulceration of the cornea, progressive abscesses, and other forms of keratitis, especially if the concavity of the glass is smeared with a disinfectant ointment. Other conditions for which it is useful include neuroparalytic keratitis, some forms of sclerotic keratitis, acne rosacea of the conjunctiva and cornea, spring catarrh, trachoma, pemphigus, xeroderma pigmentosa, hay-fever, kerato-iritis, dystrophia marginalis, and lagophthalmic keratitis. Cases of primary iritis also do well with contact glasses, and even tuberculous, syphilitic, rheumatic, diabetic, gouty, and infective cases are suitable.

There is no fear of causing glaucoma by the use of these glasses, although anxiety is sometimes aroused when the patient sees rainbow colours round an open light. This is due to misfit of the glass with the cornea, or the use of hard or distilled water, and can be obviated by appropriate fitting and the use of physiological saline. Patients who have had a plastic operation on the cornea should wear contact glasses to keep the implanted piece in position when the lids sweep over it.

Contact glasses are indicated for the treatment of squint, and one eye can be corrected by itself if desired. There are also occupational indications for this form of correction; architects, seamen, pilots, chemists, actors, and engineers should try it; so also should sportsmen such as ski-runners, bicyclists, swimmers, motorists, gymnasts, sailors, tennis players, and those who hunt.

Finally, there is the cosmetic indication; women who have pale grey or blue eyes can have them darkened to any desired degree by contact glasses.

Illustrative Cases.

CASE 1.—A man, aged 42, had lightning cataract with vision in the right eye of 6/8 with a + 14 lens and in the left eye of 6/6 with a + 16 lens. With a coloured contact glass 2/6 he obtained 6/6 vision.

CASE 2 was totally colour-blind and shunned the light, but with 50 per cent. coloured contact glasses 2/8 he could open his eyes in a bright light.

CASE 3.—A girl, aged 8, had 6/18 vision in both eyes with a − 8 lens in the right eye and a − 7 in the left. With a contact glass of 2/9·5 in the right eye and 2/10 in the left she obtained 6/8 vision. She has worn her glasses daily since October, 1929, taking them out at night, and could not now do without them.

CASE 4.—A seaman, aged 25, had a vision of 6/6 with a − 3 lens and lost his berth in consequence. With contact glasses he has normal vision and is fit for sea again.

CASE 5.—A gamekeeper, aged 29, had a vision of 6/60 in the right eye and 3/60 in his left eye. With contact glasses 2/8 in the right eye and 2/35 in the left eye he has 6/8 vision, and he wears the glasses daily without discomfort.

CASE 6.—An orchestral conductor, 56 years old, is presbyopic, but by the aid of contact glasses he obtains the necessary field of vision at a distance of 80 cm. which is necessary for his work. He cannot wear spectacles, but with contact glasses has already conducted ten important concerts.

CASE 7.—A girl of 16 has 6/60 vision in the left eye, improved by a − 2 spectacle lens to 6/36. She is astigmatic; the right eye is normal. Since December, 1929, she has worn a contact glass 3/86 on the left eye, which gives her 6/8 vision and makes her very comfortable. Her parents are delighted with her increased happiness and the abandonment of the ugly spectacles.

CASE 8.—A married woman, aged 35, a concert singer, suffers from myopia and astigmatism. She obtains 6/8 vision with a correction in the right eye of sphere − 3 and cylinder − 2, and in the left eye with a sphere − 6 and a cylinder − 2. With contact glasses 81 in the right and 86 in the left she gets the same or slightly better correction. At first she could hardly bear the glasses for an hour, but now she keeps them in as long as she wants to, and once she even fell asleep in them.

CASE 9.—A spinster, aged 20, has myopia with a little astigmatism. With spectacles (cylinder − 1, sphere − 6) she has 6/6 vision, which she also obtains with contact glasses of 9. At first she wore the glasses for an hour only, but after some days she became accustomed to them.

CASE 10.—A man of 30 has a normal right eye but the left has trachoma, pannus, and myopia, produced by keratoconus in the middle of the cornea. He can distinguish fingers at a distance of 2 ft. When he first wore a contact glass of 78 he felt very uncomfortable, and his eyelashes seemed to scratch the cornea. In time, however, the cornea grew clearer and in a few months he had a vision of 1/10 and was able to wear the glasses continuously for a fortnight.

It will, I think, be seen that contact glasses are likely to prove increasingly useful in ophthalmic work.

ANTIGENIC PROPERTIES OF DIPHTHERIA TOXOID-ANTITOXIN FLOCCULES.

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DURING the past few years several new forms of diphtheria prophylactic have been introduced. The object of workers in this field is to produce one which is safe, efficient, rapid in action, and free from non-specific poisonous materials, which—as is well known from the experience gained with the older forms of prophylactic—are apt to cause unpleasant local reactions, especially in adults. While many of the properties of diphtheria prophylactic can be studied and compared in laboratory animals, certain others, such as the liability to cause reactions on injection, can only be investigated in human beings, and the important question of the activity of prophylactics in producing rapid *immunity must* also eventually be investigated in human beings.

Through the courtesy of Dr. R. A. O'Brien, Director of the Wellcome Physiological Research Laboratories, I have had the opportunity, during the past two years, of studying the form of prophylactic known as "toxoid-antitoxin floccules" (T.A.F.) in a series of 87 nurses at the North-Western Fever Hospital. Attention has been specially directed toward the production of immunity *as shown by the* Schick reaction, the rate of production of the Schick-negative state and the degree of local and general reactions produced by the injections.

From the nature of their preparation, the floccules used would be expected to cause less *reaction* than the older forms of prophylactic. The preparation used in this work consists of a suspension in salin of the washed precipitate produced from mixtures o diphtheria toxoid and diphtheria antitoxin.

The first recorded observations on the antigeni activity of the precipitate produced by the inter action of diphtheria toxin and antitoxin were mad by Park and his colleagues[1] in 1924. They showe that a "T.A. solution of precipitate *from* mixing toxi and antitoxin" immunised guinea-pigs. Sordelli an Serpa[2] in 1925 centrifuged the precipitate produce in an over-neutralised mixture of toxin and anti toxin and found that the precipitate and supernatan fluid had apparently equal immunising value Hartley[3] investigated the antigenic properties of th washed precipitates produced in over-neutralised neutral, and under-neutralised mixtures of toxi and antitoxin and showed that the immunising valu of the first was low, that the precipitate from neutral mixtures was non-toxic but of high immunising value, while the precipitate from under-neutralised mixtures, though toxic in relatively large doses, was a remarkably active antigen. Hartley showed that these washed precipitates contained less than 1 per cent. of the total nitrogen present in the mixtures from which they separate, and suggested that, working on these lines, a relatively pure antigen—free, at least, from the non-specific material frequently the cause of local reactions—becomes a possibility. Hartley's results were confirmed by Glenny, Pope, Waddington, and Wallace,[4] and Glenny and Pope [5] showed that the precipitates from mixtures of toxoid and antitoxin are as good antigens as those prepared from toxin and antitoxin.

The substitution of toxoid for toxin permits the preparation of floccules entirely devoid of all risk, and this form of diphtheria prophylactic—toxoid-antitoxin floccules—has been used in the present work. O'Brien [6] states that the preparation seems to be free from liability to cause local reactions in human beings and quotes a series of 56 subjects immunised by Okell and Parish, 45 of whom became Schick-negative when tested from one to five months later, after one, two, or three doses of toxoid-antitoxin floccules. Dudley [7] states that the toxoid-antitoxin floccule preparation introduced by Glenny and Pope in 1927 is a better immuniser than ordinary toxoid, and records that the painful local and constitutional reactions, observed by no means infrequently when the older forms of antigen are used, entirely disappear when these floccules are used as immunising antigens.

In Germany, toxin-antitoxin floccules prepared by Schmidt have been used to a considerable extent in recent years. Schmidt and Scholz [8] in 1925 reported that toxin-antitoxin floccules immunised rabbits, and from these results, and those obtained on man, expressed the view that toxin-antitoxin floccules constitute the best antigen yet available for the active immunisation of man. They state that the injection is painless, that the local reaction produced is trifling or absent altogether, and that the antigenic value is high. Eberhard,[9] using toxin-antitoxin floccule preparations supplied by Schmidt, reported promising results, and stated, inter alia, that a single injection suffices for the immunisation of human beings. Soldin [10] makes the same claim, but other workers in Germany, while in general agreement regarding the absence of local reaction following injection, advocate the use of more than one dose of prophylactic.

Method and Results of Investigation.

As a preliminary to commencing the use of toxoid-antitoxin floccules in ordinary immunising doses a small series of cases were first given one subcutaneous injection of 0·25 c.cm. Since the members of this small group remained entirely free from troublesome reaction, ordinary doses of 1 c.cm. were thereafter employed. All new nurses, numbering 211, were Schick-tested within a few days of taking up duty in the hospital. Reactions were read seven days later, when 87 proved to be positive and were at once given a dose of the prophylactic. The number of doses given and the intervals between consecutive inoculations varied at different periods of the work, but the majority (42) received three doses of 1 c.cm. each at intervals of a fortnight; eight received three doses at weekly intervals; four had two doses at fortnightly intervals, while one who was only weakly positive received one dose only and a fortnight later was found to be Schick-negative. Four of those who were still Schick-positive eight weeks or more after the commencement of immunisation received more than three doses, the intervals between doses varying from one to three weeks. Of these four, two had six doses, one five, and one four. Whenever possible a re-test was performed four weeks after the last inoculation—i.e., from six to eight weeks after the commencement of immunisation. Those proving still positive were re-tested at intervals of four weeks until they became Schick-negative.

Unfortunately, owing to various causes such as absence on leave, transfer to other institutions, illness or leaving the service, it was impossible to carry out this programme in all the 87 positive reactors. Thus 19 were not re-tested after their course of immunisation. Of the remaining 68, 64 eventually became negative and four left the hospital while still positive. In one of these immunisation was abandoned after the first inoculation owing to a severe reaction. Another, who was still positive ten weeks after the last of three inoculations, refused a second re-test. Of the remaining two, one, who was positive four weeks after the last of three fortnightly doses, received a further three doses and was still positive when she left hospital 29 weeks after the commencement of immunisation. The other was positive six weeks after the last of three weekly inoculations, received a further 1 c.cm., and was still positive five weeks later, when she was given a fifth dose. She was still positive five weeks and 14 weeks later—or 34 weeks after the commencement of immunisation—when she, also, left hospital.

In only two, therefore, of 86 nurses did a full-controlled course of inoculations certainly fail to convert the Schick reaction from positive to negative.

Table I. includes only those cases who received a single course of immunising injections and were then re-tested at intervals until immunity was established as shown by a negative Schick reaction. The particulars of the four subjects who received more than a single course of the prophylactic and finally became immune are as follows.

All four were first given a course of three inoculations; subsequent re-tests being positive, one was given one more dose and became negative 14 weeks from the commencement of immunisation; another had two extra doses and became negative in 20 weeks. The remaining two had a second course of three injections, becoming negative in 16 and 29 weeks respectively. Comparing these results with those shown in Table I., it does not appear that the extra doses of prophylactic have materially shortened the time required for immunisation.

Table I. gives some indication of the period required to establish immunity, but it must be remembered that, owing to the reasons already mentioned, some of the subjects were not re-tested at the scheduled times and therefore the actual time taken to immunise may have been less than that shown. For example, in the series which had three fortnightly inoculations, the one who was Schick-negative 25 weeks after the last dose only had the one re-test. Similar conditions obtained in several of the other long cases. An important fact brought out in this series is that, if three doses of 1 c.cm. each are given at intervals of a fortnight, one may expect nearly one-half of the cases to be immune four weeks later and 90 per cent. to be immune in nine weeks.

The small series who received only two inoculations were not specially selected cases, but were taken in rotation at the end of the investigation when an attempt was being made to discover if two doses were sufficient; results coming in since the Tables were compiled have not quite borne out the good impression that was based on the original small series.

The comparatively poor results shown in the series who had three doses at weekly intervals may be attributable to the fact that this series contained several long cases who were not re-tested early enough.

Precise details of the length of time elapsing between courses of immunisation and the proved establishment of immunity are scanty in the literature. Kelleher,[11] in his report of immunisation work in a series of 224 boys on the training ship *Exmouth*, found that the average time dating from the first immunising dose was 2·9 months. The antigen used by Kelleher was the older T.A.M., but the average age of his cases was probably five or six years below that of the hospital nurses.

TABLE I.—(*55 Cases*).

Inoculations— Number .. Interval between ..	1 —	2 2 weeks.	3 1 week.	3 2 weeks.
Immunising time from final inoculations.	Number and percentage Schick-negative.			
Weeks.	%	%	%	%
2	1 (100)	1 (25)	—	—
3	—	—	—	1 (2·4)
4	—	1 (50)	1 (12·5)	19 (47·6)
5	—	1 (75)	—	6 (61·9)
6	—	—	1 (25)	3 (69)
7	—	—	—	1 (71·4)
8	—	1 (100)	—	2 (76·2)
9	—	—	1 (37·5)	6 (90·5)
13	—	—	—	1 (92·8)
15	—	—	—	1 (95·2)
19	—	—	1 (50)	—
20	—	—	2 (75)	—
21	—	—	1 (87·5)	—
25	—	—	1 (100)	1 (97·6)
28	—	—	—	1 (100)
Total cases..	1	4	8	42

REACTIONS ON INOCULATION.

This matter is of considerable importance both to the individual inoculated and to a hospital administration. I have, therefore, kept careful records of all reactions, and the results are shown in Table II.

TABLE II.

Local.		General.		Combined local and general.		Total.
Slight.	Mod.	Slight malaise	Mod. malaise with vomiting.	Slight local and slight general.	Slight local with mod. malaise and vomiting.	
12	1	5	2	2	3	25

The reactions were, generally speaking, either completely absent or very slight, although in one case in my series it was necessary to abandon immunisation on this account. The comparative absence of reactions is all the more striking when it is realised that all the subjects were of adult age, for it is well known that, whereas with the older prophylactics reactions were uncommon in children, the reverse was the rule in adults. A local reaction was classified as slight if there was no more than a little redness or tenderness at the site of inoculation. The one noted as moderate had redness and swelling, involving one-third of the upper arm and lasting about three days. In four of the five cases in which vomiting occurred, it was after the second injection. The one case in which immunisation was abandoned was 27 years of age and, as might have been expected, a combined pseudo and positive reactor. She showed marked redness, pain, and swelling of the upper arm, vesiculation around the site of inoculation, and considerable malaise after the first inoculation. No further dose was therefore given.

DIPHTHERIA DURING THE COURSE OF IMMUNISATION.

Four nurses developed undoubted faucial diphtheria before immunisation was complete and negative Schick reactions obtained.

CASE 1.—The onset was on the thirteenth day after h second inoculation—i.e., the day before the third dose w due. The Schick reaction was still positive 15 weeks aft the onset of her attack, when she received a further 1 c.c of prophylactic. A second re-test four weeks later prove negative.

CASE 2.—The onset in this case was five weeks after t last of three fortnightly inoculations, when she was sti Schick-positive. No further doses were given, but th Schick reaction was negative eight weeks later. Sh remained a nasal and faucial carrier for six weeks.

CASE 3.—This nurse received only two fortnightly dose of prophylactic and developed faucial diphtheria six week after the second. She became Schick-negative three week later.

CASE 4.—In this instance an attack of faucial diphtheri occurred 12 weeks after the last of four doses. The ant toxin content of the blood was then estimated and foun to be less than 1/50 of a unit per c.cm.

None of these cases had any reaction, either local or genera after the injections, and the attack of diphtheria was mil and uncomplicated in every instance. The mildness of the cases helps to dispose of the negative phase bogy.

It must be borne in mind that these cases a occurred in newly joined nurses who had come fro country districts where the natural immunity is lo and that, once in the hospital, they were continuousl liable to heavy doses of infection.

Conclusions.

The preparation of diphtheria toxoid-antitoxi floccules used in this work is an efficient and rapidly immunising antigen which definitely protects against diphtheria. Its use in adults is not commonl followed by unpleasant reactions and, with rar exceptions, in the few instances when these do occu they are of a trifling character. A preliminary sma injection of the prophylactic is unnecessary, and th best results are obtained by giving a course of thre inoculations of 1 c.cm. each with an interval of tw weeks between doses.

I would like to acknowledge my indebtedness to Dr. R. O'Brien, of the Wellcome Research Laboratories, for h kindness in supplying the prophylactic; to Dr. P. Hartle of the National Institute for Medical Research, for ki help in regard to the literature of the subject; and to D A. Joe, medical superintendent of the North-Weste Hospital, for valuable suggestions.

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CLINICAL AND LABORATORY NOTES

PYREXIAL TREATMENT OF G.P.I. WITH SULFOSIN.

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These notes are confined to the treatment of general paralysis and the diagnosis in each case has been confirmed by examination of blood and cerebro-spinal fluid. They cover 12 successive cases all with well-marked clinical symptoms and treated with sulfosin (Leo). The introducer of this treatment, Dr. K. Schroeder,[1] claims to reach a high degree of pyrexia, but although 130 injections were given to these 12 patients there was a rise of temperature over 104° F. on only seven occasions. The highest average temperature in any one individual course was 103·2° F., and in the whole series there was only one rigor. Various methods were employed to enhance the pyrexial effect of the injections, but without appreciable result. It was assumed that the peak of the temperature depended on the rate of absorption; consequently the following methods were adopted: (*a*) application of kaolin poultices for two hours before and immediately after the injections; (*b*) massage after the injections; (*c*) injection of the material as hot as could be borne by the patient; (*d*) dilution or concentration of the fluid by 25 per cent.; (*e*) injection of the dose at two sites in the same leg; (*f*) injection of half the dose in each leg.

Table I.

Patient.	Course.	Injections.	Total c.cm. of sulfosin.	Average max. temp.	Average duration of temp. above 100° F.
A ..	First.	9	68	102·8	13 hours.
	Second.	12	90	102·7	18 ,,
B ..	—	12	86	102·5	16 ,,
C ..	—	12	81	101·7	11 ,,
D ..	—	10	150	101·7	12 ,,
E ..	—	9	97	102·7	16 ,,
F ..	—	10	142	102·5	15 ,,
G ..	—	7	36	102·3	11 ,,
J ..	—	5	45	101·9	18 ,,
K ..	—	10	87	103·2	20 ,,
L ..	First.	12	112	102·2	14 ,,
	Second.	9	145	103·1	19 ,,
M ..	—	13	169	101·7	10 ,,

Table II.

Amount of injection.	Number of such injections.	Average of temperature peaks.	Average of duration of temperature above 100° F.
Up to 3 c.cm. ..	12	101·8	10 hours.
5 ,, ..	34	102·0	13 ,,
10 ,, ..	55	102·4	16 ,,
15 ,, ..	6	102·5	18 ,,
20 ,, ..	22	102·7	16 ,,
30 ,, ..	1	100·8	5 ,,

From the results shown in the Tables it is concluded that dosage is not the only factor determining the height of temperature. On the assumption that an increase of dose above 10 c.cm. would result in lengthening the pyrexia, doses up to 30 c.cm. were employed at one injection (Table II.) but without the expected result; and it seems that the maximum dose required at one injection is 10 c.cm. Again, it was noted that whatever the amount of the injection the temperature began to rise with marked constancy in from 9–12 hours.

These 12 successive cases in which the treatment was undertaken were all in an advanced stage of the disease. Eight patients were intractable, maniacal, and vividly hallucinated. The mental benefit derived became evident after a few injections, whereas the general improvement was not experienced till after a month's interval. The noted physical changes were increase of weight and a reduction of anæmia. Those patients who on admission required a single room were, without exception, able after a few days to return to open dormitory.

Of the total of 12, two are now discharged "recovered," one having returned to his old employment; two will shortly be recommended for a "period of trial"; one, the most advanced case, is not likely to recover, and the rest without exception have shown amelioration of their symptoms in varying degree. The conclusions arrived at are that treatment with sulfosin is eminently suitable in advanced cases because of its harmless effect, especially on a degenerate myocardium. The facility of regulating the temperatures and of procuring the material widens the scope of the treatment, while the results obtained compare very favourably with statistics of induced malarial pyrexia.

My thanks are due to my medical superintendent, Dr. E. G. T. Poynder, for permission to publish this summary, and I acknowledge the willing assistance of Dr. Eric Wordley in examining the bloods and cerebrospinal fluids.

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[1] The Lancet, 1929, ii., 1081.

EXTREME INSTANCE OF THE TOXIC EFFECTS OF LUMINAL.

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AND
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The patient whose history is given below seems to have combined in her illness in such a remarkable manner so many of the recorded toxic effects of luminal that we think her case merits publication; a further point of interest is the resemblance of her condition to a progressive infection.

The skin—at one time and another—showed nearly all the features described by Sachs,[1] Caussade [2] and others, Millian,[3] and Menninger[4]; all the visceral and toxic effects—with the exception of hæmatoporphyrinuria, also mentioned by Menninger [4]—were present and, in addition, one or two new features which we have not found described. The mental state recorded by Carlill [5] in his patient who was inadvertently given grs. 120 of luminal in 12 days was not present. In our own experience of this drug we have previously seen macular rashes and confusional states, but never before such a remarkable collection of symptoms and signs.

The patient, a married woman of 47, was given gr. ½ of luminal three times a day for a month for a condition of hyperpiesis, which did not show any evidence of renal involvement. On the last day of the month an urticarial rash appeared on her arms and legs, and the luminal was stopped. The illness which followed lasted about a month and can conveniently be divided into weekly periods.

First week.—The rash, which was at first urticarial, later became erythematous and then morbilliform. Her temperature varied between 99° and 102° F., and she had a good deal of abdominal pain, vomiting, and diarrhœa. Hyperpnœa was a marked and persistent feature and in her urine albumin, ketone bodies, and sugar appeared. At the end of this week an examination of the blood showed: Widal reaction negative; Wassermann reaction negative; blood-sugar, 88 mg. per cent.; blood-urea, 28 mg. per cent.

Second week.—The rash became scarlatiniform in appearance and began to fade; the gastro-intestinal symptoms continued, with the addition of rectal hæmorrhage; the pyrexia was maintained. New features were the enlargement of lymphatic glands in the neck, axillæ, groins, antecubital and popliteal spaces, and the appearance of a large and tender liver without any icterus. Bacteriological examination of the fæces at this stage showed nothing abnormal.

Third week.—The rash began to fade and the skin to desquamate, but the patient was very ill, with continued diarrhœa and nausea; the tongue was pale, smooth, dry, and fissured, and both the pyrexia and the albuminuria continued. A second Widal reaction was also negative.

Fourth week.—This marked a general improvement. The gastro-intestinal symptoms began to subside, leaving some abdominal distension; the hepatic and glandular enlargements went; the pyrexia was slight and intermittent. The macular rash reappeared but—in the main—desquamation proceeded steadily. Further examinations at this stage gave the following results: Blood-sugar, 96 mg. per cent.; urea, 41 mg. per cent.—a rise; cholesterol, 152 mg. per cent.; carbon dioxide combining power (van Slyke), 57 vols. per cent. Urine, a trace of albumin; no sugar or ketone bodies; no bile-pigments or excess of urobilin; urea, 3·6 per cent.; some pus cells and several hyaline casts. A spectroscopic examination did not show any hæmoglobin derivatives.

After this, general and rapid improvement took place. Glycosuria returned once more, but the blood-sugar remained normal at 88 mg. per cent. The patient was allowed up on the thirty-fifth day, but even after this there was a recurrence of the macular rash.

In the treatment, most of the remedies which were used were designed for the relief of urgent symptoms such as pain, vomiting, itching, and sleeplessness; in the more radical therapy—i.e., of assisting the elimination of the drug—we knew of nothing specific, but we were inclined to think that contramine and calcium were of some use. Diarrhœa was the most troublesome feature; many medicines were tried and the most effective appeared to be mist cretæ co.

In conclusion, we would like to express our thanks to Bayer Products Ltd. for their interest in this rare event of poisoning from a drug so widely used as luminal.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY.

A MEETING of this Subsection was held on March 11th, Mr. LIONEL NORBURY presiding.

Dr. ARTHUR F. HURST opened a discussion on

Ulcerative Colitis, excluding Tropical Diseases.

He recalled the first discussion on this subject in England 23 years ago. At that date it was considered to be a rare and undiagnosable condition due to some terminal complication, and always fatal. Now, largely because of the use of the sigmoidoscope, knowledge of the condition and the prospects of sufferers had greatly improved, since the disease had been shown to be capable of control by treatment to a great extent. The appearance of the colon in bacillary dysentery, during life, was indistinguishable from that of ulcerative colitis. In 1923 L. S. Dudgeon had found that swabs from the ulcers of sporadic ulcerative colitis gave the Flexner bacillus. Last year Dr. Hurst removed a small adenomatous polyp from the rectum of a patient the subject of ulcerative colitis, so that he might take a swab from the raw surface left behind. That patient—a typical case—had been ill with ulcerative colitis for six years, and had developed a stricture and numerous polypi. From the depth of tissue below the adenoma Dr. F. A. Knott had isolated the Flexner bacillus. Such a positive finding was worth a great many negative ones. J. W. H. Eyre had shown that epidemics of dysentery occurred in English asylums, while D. Nabarro showed that many children supposedly to have summer diarrhœa really had dysentery. Confirmation was supplied by the success of antidysenteric serum in the early cases. In 25 per cent. of Dr. Hurst's cases achlorhydria was present; it was probably a predisposing cause of the colonic condition, since it meant the loss of the normal antiseptic barrier which prevented virulent bacteria from reaching the intestines. Until the war no complications of the disease appeared to have been recognised; it was thought that in ulcerative colitis strictures never developed. The reason the latter now occurred was that subjects of the disease did not now die so soon, and there was time for fibrous strictures to develop. In several instances a short-circuiting operation had led to a quick recovery. Admittedly some so-called polypi were nothing more than tags, but some were true adenomatous polypi. In rare cases the latter might become malignant. One patient seen by Dr. Hurst had all three stages at the same time: ulcerative colitis, with many ulcers, polypi, and carcinoma of the rectum. It was very important to recognise perianal abscess, and fistula in ano sometimes occurred. Lastly, he had seen many cases of the condition with arthritis of the same type as followed bacillary dysentery. He had not yet seen an instance of perforation.

As to *diagnosis*, he regarded the use of the sigmoidoscope as absolutely essential; for those who did not trust their use of it, a long proctoscope would show much, since in ulcerative colitis there were always ulcers in the rectum. The symptoms might be identical with those of carcinoma, and inspection was the only safeguard against mistake.

The most important general points in *treatment* were to keep the patient warm in bed and to give a generous diet, omitting only fibres, pips, and residue. In patients who were anæmic, with a low hæmoglobin value, transfusion of blood was of enormous value. For flatulence the patient should take charcoal. Lavage given with a soft catheter in the rectum was useful, but it must be given slowly. He did not think there was much advantage in a wash-out through an appendicostomy. Polyvalent antidysenteric serum should be given to every patient; from this he had seen dramatic results. In certain long-standing cases serum had no effect, though even these might recover. Treatment should be continued until the sigmoidoscope showed that *no trace of ulceration remained* and the mucous membrane looked healthy. When achlorhydria was present the patient should take acid regularly for the rest of his life, with sufficient paraffin to keep the excreta soft.

Dr. **CUTHBERT DUKES** spoke on the

PATHOLOGY OF THE CONDITION.

In severe cases the ulceration was often most conspicuous opposite the longitudinal muscle bands of the colon, between which a thin strip of surviving mucous membrane could be seen. Stricture following fibrosis was found in 8·5 per cent. of the cases, and perforation occurred in 2·6 per cent. No ætiological theory provided a completely satisfactory explanation. The supposed relationship of the condition to bacillary dysentery was discounted by the bacteriological report returned, which was nearly always negative, by the absence of agglutination, and by the uncertain effects of anti-dysentery serum. The diplo-streptococcus of Bargen could be recovered from the ulcers, but it was found also in other types of ulceration and in normal people. Dr. Dukes's own idea was that sufferers from the disease were born with inferior intestinal organs which were very susceptible to trauma, and had a lowered resistance to bacterial invasion. Observations should be made by the pathologist on the fæces, blood, and pus, on the relative proportions of streptococci and staphylococci, and on the presence of late- and non-lactose-fermenting bacilli and hæmolytic bacteria. He could do more than at present if he were given a sample of the patient's blood and had the opportunity of collecting his cultures from an ulcer through the sigmoidoscope. He only recommended an autogenous vaccine when the agglutination test was positive for bacteria from an ulcer.

A PLEA FOR THE SIGMOIDOSCOPE.

Mr. **J. P. LOCKHART-MUMMERY** said that the great majority of cases of ulcerative colitis (apart from tropical dysentery) were due to an infection of the mucous membrane of the colon by streptococci, commonly the *S. viridans* or *fæcalis*. Every grade was found, and mild cases were not uncommon. The latter were often effectively treated by non-operative methods, though he had seen mild cases suddenly become septicæmic. Some recent views that an examination of the bowel in these cases with the sigmoidoscope was not necessary he regarded as a retrograde and pernicious doctrine, for a mere examination of discharges from ulcers did not sufficiently indicate the severity of the case. The instrument was needed to diagnose the disease from cancer and to watch the results of treatment. Its passage did not cause pain, no anæsthetic was wanted, and there was no danger. Appendicostomy he regarded as curative if done before the bowel had become severely damaged; it could be carried out under local anæsthesia, or gas and oxygen. It gave the surgeon immediate control over the disease and enabled it to be held in check. At St. Mark's Hospital all other treatments had been tried, but the staff had returned to appendicostomy, not only to prevent recurrences, but to save life. Ulcerative colitis showed a great tendency to relapse. A view appeared to prevail in medical circles that the condition should be treated by lavage and medical methods, operation being resorted to only when those measures failed. Mr. Lockhart-Mummery was sure that such a policy did not give the patient the best chances of recovery. The operation, in his experience, seldom failed (when done in an early stage) to cure the patient. But he insisted that the appendix should not be opened until the skin wound had healed; otherwise severe infection of the wound was likely from the infected mucous membrane of the appendix. A strong point in favour of operation was that it obviated the need for the patient to spend long periods in bed from time to time. A rare after-result was stricture of the colon. Joint changes and septic arthritis were also rare. The frequent complication of amœbic dysentery, liver abscess, seldom occurred after ulcerative colitis. Perforation of the bowel wall occurred only in the acute stage. Usually that accident was fatal, since the bowel was in a bad state for an operation. Ulcerative colitis, he contended, bore no relationship to adenoma of the colon; the condition following ulcerative colitis was one of granuloma.

THE SIGMOIDOSCOPE CONDEMNED.

Dr. **LETHEBY TIDY** said that in the war he was in charge of a large dysentery hospital, and there he *grew to adopt the methods of treatment* which he still employed. Since the war he had had 27 such cases in private practice, and among them three deaths. Five years ago he ceased doing sigmoidoscopy, and since then he had had 13 cases with no death. He had not had one of these cases operated upon since the war; in his view neither operation nor sigmoidoscopy was necessary. Certain principles must be adopted in treating the disease. The patient must be fed well, kept warm, and given fluid by the mouth. Never must morphia be injected. Medicated enemata should not be given in the acute stage, nor in the early stage of treatment of a chronic case. Enemata must not be given daily. He advocated three stages in treatment per rectum: (1) starch and opium enemas; (2) colonic washes; (3) medicated enemas in the late stage, and only when the stools were less frequent than five a day. He had found no good effect from the use of vaccines, and he could not confirm from his experience Dr. Hurst's good results from serum; he had no experience of ionisation for this condition. He did not see how the results he had attained in recent years could be bettered by surgery, though he cordially joined with those who paid tribute to Mr. Lockhart-Mummery's pioneer work in sigmoidoscopy and appendicostomy in bringing down the mortality figure from the appalling 80 per cent. Diagnosis was easy without the passage of any instrument.

Dr. **GRAHAM HODGSON** and Dr. **P. J. BRIGGS** demonstrated films of cases of chronic ulcerative colitis.

Dr. **F. J. POYNTON** spoke as a sufferer from an acute form of the disease in his student days, and believed that nervous and physical strain was probably a determinant in his case. He was thankful that in those days neither the sigmoidoscope nor an operation were likely to be tried, owing to the great pain and distress they caused. He did not see that the sigmoidoscope would enable one to say whether a patient would be cured or not, unless the vision could be carried to the cæcum. No reference had been made to a most distressing complication—namely, spasm of the colon. The best thing for that was morphia. Treatment was always a matter of individual experience. In very bad cases, with severe hæmorrhage, he had had good results from a careful liquid diet, using opium and bismuth by the mouth, combining it with kaolin.

THE BACTERIAL CONTENT OF THE BOWEL.

Dr. **L. P. GARROD** spoke of cases which he had seen or of which he had collected particulars in the last two or three years, chiefly at St. Bartholomew's

Hospital. Of cases admitted with the label ulcerative colitis, four proved to be amœbic dysentery; some had been ill for some time, one for three years. None had dysentery bacilli in their stools. About 20 had various bacteria, including coliform bacilli of aberrant types, which might or might not be significant. Eleven out of 17 cases showed Bargen's bacillus. He found it easy to grow the coccus in dextrose broth which had been rendered anaerobic by a paraffin seal. It grew rapidly in sugar. The anaerobic conditions did not affect its growth, but they did affect the growth of other bacteria. Dr. Garrod regarded the presence of this organism in this disease as significant. It could only be found by this method in material obtained from one of the ulcers; it was not apparent in fæcal material, and it could be demonstrated in great numbers in direct films from muco-pus taken from an ulcer. He considered it worth while in all cases of ulcerative colitis to do an exhaustive bacteriological examination, since the classification of types on clinical grounds had, he thought, reached its limit. Progress was most probable from a classification according to bacterial content, the results of treatment being assessed on that basis. It must be remembered that tuberculous ulceration of the lower part of the descending colon could occur in people who showed no other sign of tuberculosis in the body.

APPENDICOSTOMY.

Sir **CHARLES GORDON-WATSON** said he had seldom been without one or two cases of ulcerative colitis in his wards, and he had tried every advertised form of treatment. His general impression was that some cases did well, others did not. One or two brilliant results had been obtained from the use of anti-dysenteric serum; but he had tried it on dozens of cases since without being able to satisfy himself that real benefit accrued. Even patients who did well on serum relapsed later, and one who came back after a year or two failed to respond again to the serum. Except in mild cases, he always carried out appendicostomy. He did not think that the proximal colon could be adequately dealt with per rectum, and he regarded appendicostomy as essentially a life-saving measure in many cases. He had used barium sulphate solution for the irrigation of the colon from appendicostomy. For chronic cases he was a believer in transfusions. An infusion every four weeks always left the patient definitely better. He demonstrated X ray films of post-operative stricture, one of which had persisted for five years. He also showed skiagrams of tuberculous ulcerative colitis with three strictures.

DIATHERMY.

Dr. **KERR RUSSELL** said that diathermy had been used for this disease, a cylindrical electrode being inserted into the rectum, and the inactive electrode being fastened round the waist. The current so passed had a marked antispasmodic effect, and stimulated both the blood and the lymph circulations. He described an improved method of carrying out colonic lavage. It was by means of a special rectal catheter, which could be retained in position during the treatment. A large container was used, eight gallons being the capacity, and it was connected through a valve with the rectal catheter. Hypotonic saline at a temperature of 104° F. was used, and the small residue of fluid which did not come out again gradually worked its way to the higher diseased areas. The treatment lasted half an hour, and during that time 50 to 60 evacuations took place.

Dr. J. **BURNFORD** said he had had 48 cases of ulcerative colitis. Some cases were curable, some incurable, and this was understandable if one looked at specimens from the anatomical standpoint. Five of the 48 cases died. He had found the results of ionisation to be very good. He believed in rest in bed and a generous diet for these patients. Medical treatment called for much patience and attention to small details.

The **PRESIDENT** regretted to hear criticism of the sigmoidoscope, especially since most people dealing with abdominal cases had confused ulcerative colitis with carcinoma of the colon. He could not see the grounds for objection to the use of this instrument; it was not dangerous, and it could be passed without an anæsthetic. He favoured appendicostomy in these cases.

Dr. **HURST**, in reply, said pain was to him a call for charcoal, as it was the pain of distension due to gas, and this gas was absorbed by the charcoal. A difficulty in diagnosis often encountered was that between stricture due to spasm and that resulting from organic disease. The administration of a barium meal instead of a barium enema was useful here. The meal was held up by an organic stricture for three or four days, but in spasm the hold-up was of short duration.

SECTION OF OTOLOGY.

A MEETING of this Section, held on March 6th under the presidency of Mr. **ALEXANDER TWEEDIE**, was mainly devoted to a discussion on the

Effects on Hearing following Fractured Base of the Skull.

Mr. **EDWARD D. DAVIS**, in opening the discussion, observed that this subject had gained added importance from the increasing frequency of motor and other street accidents. Too often patients suffering from fractures of the base of the skull were not sent for an aural examination until some weeks after the accident, and then only because deafness existed, or because a question of compensation had come into the case. Inspection of the ears immediately after the accident would be more valuable, since the otologist could then better estimate the extent of the damage, and his findings might be useful in diagnosis, treatment, and prognosis. Most of the fractures of the base involved the middle fossa, which was to be expected, seeing that a line of weakness extended through both Gasserian fissures and the Eustachian tubes to the foramina lacera media, the sphenoidal sinus being a connecting link. Fracture of the middle fossa usually followed this weak line, and the thin roof of the canal of the tensor tympani and Eustachian tube, and the roofs of the tympanum and mastoid antrum were nearly always involved in this fracture. In patients who survived the accident the middle ear was practically always found to be involved. Only seldom in non-fatal cases was the capsule of the internal ear or labyrinth fractured. A few fatal cases only, when the accident had been of great violence, showed fractures of the internal ear. In 1916 Mr. J. S. Fraser, of Edinburgh, recorded and showed microscopical sections of four cases in which the fractures involved the labyrinth in two and the middle ear only in the others. The two middle ear cases survived for a period, later dying of meningitis, but the cases in which the labyrinth was damaged were soon fatal. When the line of fracture was through the Gasserian fissure, the external auditory meatus was often involved, the fracture appearing to split the meatus longitudinally. In exceptional cases—i.e., those in which the force was very great—the fracture extended across the upper or anterior surface of the petrous bone into the internal auditory meatus. Fractures of the posterior fossa began in the thin bone of the cerebellar fossa, and radiated into the lateral sinus groove on the same side; there they passed either along the groove for the inferior petrosal sinus, or across the petrous pyramid near the inner edge of the lateral sinus, through the cancellous bone surrounding the mastoid antrum and semicircular canals, and behind and external to the internal auditory meatus. Even a moderate blow on the temporal fossa might produce a radiating fracture cracking the roof of the middle ear, when an effusion of blood into the tympanum would occur without rupture of the drum. No blood would be found in the auditory meatus, but the typical bluish drum would be seen. In four such cases the only indication was deafness; there had been some doubt whether the skull was fractured until hæmorrhage into the middle ear confirmed it. These particular patients recovered hearing in three weeks, when the blood had been absorbed and the drum was restored to normal. More frequently the upper half of the drum was ruptured, and if the effusion of blood was accompanied by a cerebrospinal fluid leakage, the fracture must be regarded as a dangerous one, opening up the subarachnoid space. When this occurred the case was usually fatal. Profuse and prolonged hæmorrhage from the ear indicated that the middle meningeal artery or the lateral sinus had been ruptured, and operation was urgently indicated. When this intracranial hæmorrhage found a vent through the ear, the ear should not be firmly plugged. Bleeding into both ears was a grave occurrence, the mortality of these cases being 66 per cent., as contrasted with 39 per cent. when only one ear bled. When the patient had had suppuration of the middle ear before the accident, there was a great likelihood of meningeal infection, with a correspondingly grave outlook. Mastoid suppuration had been known to follow a fracture, and meningeal infection might ensue. A peripheral paralysis of the facial nerve occurred in about 46 per cent. of cases of fracture of the middle fossa of the skull; in a few cases the eighth nerve was also involved. The onset of the paralysis was almost immediate, but if it was delayed it was probably because of hæmorrhage into the facial canal. This paralysis had disappeared eventually, sometimes after a long interval, in all Mr. Davis's cases, but two of the patients had a facial tic or twitch as a sequel.

Three grades of injury could be recognised: (1) Hæmorrhage into the middle ear only, without rupture of the drum, presumably due to a crack in the roof of the middle ear. The typical bluish drum was the indication. (2) Rupture of drum, with hæmorrhage from the auditory meatus; the rupture was usually in Shrapnell's membrane. (3) The more severe fractures, splitting the hard bony capsule; cerebro-spinal fluid escaped, the facial nerve was paralysed, and usually death occurred. In a number of the cases seen by Mr. Davis no deafness was reported; 25 of the patients sent to him on account of deafness had the middle ear type. The four patients in whom effusion of blood into the middle ear was the only lesion detected had marked middle-ear deafness when they were first seen. Hearing was completely restored when the blood disappeared after three weeks, and then no lesion was detectable. Patients whose fracture was followed by local suppuration and inflammation suffered most loss of hearing, and their deafness was permanent. Probably all victims of injury to the internal ear died. Tinnitus occurred in some of the more seriously injured and in one or two highly-strung patients, and this symptom might persist for a year or more. It was not clear what produced this tinnitus, and the lesion was not always in the internal ear. Most of the tinnitus cases showed only an increased excitability of the labyrinth. A few of them complained of giddiness, not true vertigo, but unsteadiness, a "*swimmy*" feeling, and lack of confidence in negotiating traffic. This indefinite vertigo was considered to be of central origin. The correct attitude towards these cases of ear injury was not always one of masterly inactivity; the onset of suppuration should be carefully watched for. Prolonged rest in bed was essential, with a minimum of interference with the ear. The head was kept raised and the auditory meatus was cleaned with spirit. The meatus should not be packed with gauze, or syringed, and no drops should be used. But the onset of suppuration changed the aspect of the case and therefore the attitude of the surgeon; vigorous efforts to obtain free drainage must be made. If necessary, the drum should be incised, and a simple mastoid operation must be done on the slightest indication, as gently as possible, a motor burr offering the minimum of jarring.

DISCUSSION.

The PRESIDENT confirmed the desirability of consulting an aural surgeon early on these cases of skull injury; too often he was not called in until weeks after the concussion was sustained, and then usually because the patient had deafness and loss of the sense of smell.

Dr. DAN MCKENZIE declared that these fractures were now becoming much more common, especially in cities and towns; in motor accidents fractured base was the prevailing lesion. Many of the deaths from meningitis were doubtless due to infection having entered from outside through the meatus and middle ear, because of a fracture of the temporal bone. The aural surgeon, if consulted early, might be able to obviate some of the fatalities by careful treatment of the meatus soon after the accident. Meningitis might not supervene until six months after the accident, and J. S. Fraser had recorded a case in which a year had elapsed. One should always be ready to operate if there was a danger of extension to the meninges.

Mr. LIONEL COLLEDGE related three cases. He did not consider that nerve deafness was very rare in cases of fracture of the base. He was doubtful whether suppuration constituted a call for operation, even when its presence was established. He instanced the case of a coachman who fell off his box, and when brought to hospital had a very profuse suppuration in both ears. No operation was performed, and in six weeks the patient made a good recovery, with good hearing.

Mr. L. GRAHAM BROWN said that usually several days or a week elapsed before he saw hospital cases of fractured base, and members would agree that this delay was unjustifiable. Private patients were often brought at a still later stage in connexion with compensation. Often the case was complicated by suppurative otitis media, and it was very difficult to say whether the accident had caused the latter, or whether it had existed previously.

Mr. HAROLD KISCH referred to the value of X rays in the diagnosis of difficult cases. The matters on which the opinion of the otologist was usually sought were: (1) if there was bleeding from the ear, was it due to fractured base; (2) was the damage to hearing likely to be permanent; (3) what was the outlook in regard to life? Sometimes bleeding proceeded only from the bony meatus.

Mr. F. W. Watkyn-Thomas said a fractured labyrinth did not always heal by bony union, but by scar tissue; in such cases any later infection of the ear would be apt to set up meningitis because of this ill-guarded labyrinth. A point of importance was the occurrence of late changes in hearing. If as a result of the accident some blood entered in the perilymphatic spaces, organisation of that blood might cause the nerve deafness which occasionally followed as long as 18 months afterwards.

Mr. H. V. Forster spoke of cases of recovery from middle-ear deafness following severe head injury diagnosed as fractured skull. Sometimes nerve deafness came on after only slight injury. He also spoke of a patient who had a constant dripping of cerebro-spinal fluid over a considerable period following an accident; a fatal termination was expected but he got quite well. The assessment of compensation would always be difficult in these cases unless the aurist saw them early.

Mr. Herbert Tilley had often thought that the tinnitus from which these patients suffered was of cerebral origin. This was supported by the fact that in extreme cases the auditory nerve had been divided inside the skull, and still the tinnitus persisted. He agreed that the less done to these fracture cases the better. Cranial surgeons favoured keeping the patient under large doses of sulphate of magnesia to reduce the tendency to œdema of the cerebral structures.

Mr. J. F. O'Malley dealt with the question of prognosis in relation to the escape of cerebro-spinal fluid. Though this escape indicated a very severe lesion, the mere fact of its occurrence did not justify a bad prognosis. What was of most importance was the underlying lesion. He related the case of a man with an old mastoid condition, operation on which resulted in a small daily loss of cerebro-spinal fluid over five months (the total loss being estimated as seven gallons) without any apparent detriment to health.

Sir James Dundas-Grant said that sometimes the question arose in these cases whether suppuration seen was a result of the recent or of an old-standing injury. The condition of the Eustachian tube gave a clue, because if that was narrow, probably the suppuration was of old standing. Tinnitus, in his view, was often as much due to the concussion as to local damage in the ear. Perchloride of mercury seemed to have an extraordinarily good effect on percussion cases.

Mr. N. S. Carruthers emphasised the need for making sure that exuded fluid after an accident really was cerebro-spinal fluid.

Mr. Davis, in a brief reply, said he had found the diagnostic use of X rays in these cases very disappointing; this was unfortunate, since skiagrams could now be taken without having to transfer the patient to the X ray room.

Sheffield Hospitals.—At the annual meeting recently of the Sheffield and District Association of Hospital Contributors it was stated that the hospitals of the city owe £92,050 to the banks. Mr. M. Humberstone, the president, suggested that the unemployed should be induced to join the penny-in-the-pound scheme, since the Joint Hospitals Council had given them the same facilities for convalescent treatment, ambulance service, and travelling vouchers as the employed contributors.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASE.

At a meeting of this Society in London on Feb. 27th Mr. David Lees (Edinburgh) gave a presidential address on

Gonococcal Arthritis.

The earliest descriptions of gonococcal arthritis in England, he said, were those of John Hunter, Astley Cooper, and Benjamin Brodie. After the discovery of the gonoccocus by Neisser in 1879, the organism was found in the joint fluid, and later in the blood and lymph stream of patients suffering from acute arthritis; this definitely established the ætiology of the condition.

Nearly all the figures concerning the incidence of gonococcal arthritis give a wrong impression of its prevalence; they were quoted by workers holding hospital appointments who came in contact with most of the cases of arthritis but only dealt with a proportion of those suffering from gonorrhœa. In Mr. Lee's series of over 13,000 patients at the Royal Infirmary, Edinburgh, there were 388 cases of gonococcal arthritis, 324 of which were acute or subacute. The incidence in men was 3·3 per cent. and in women 1·8 per cent. Joint complications in gonorrhœa were four to five times as common in men as in women. In 200 cases of vulvo-vaginitis no cases of arthritis had occurred, although some American workers stated that it was a common complication of vulvo-vaginitis in children, and gave figures as high as 40 to 50 per cent.; two cases had occurred in association with ophthalmia neonatorum. The chief predisposing causes were lack of treatment in both sexes, too active exercise during the acute stage, and trauma to a joint. Alcohol also predisposed to it, and as with other complications in the female it was apt to occur after menstruation. Although the condition was a septicæmia, the organisms in the blood were few in number. In the joint fluid it was difficult to demonstrate them after a period of five or six days. There were a few cases of arthralgia which might be toxic in character and not due to an organismal infection of the joint.

CLINICAL FEATURES.

Gonococcal arthritis might occur at any stage of gonorrhœa, but in the men there usually was an infection of the posterior urethra, and the prostate and vesicles. In the female the common foci of infection were the cervix and the Fallopian tubes. The knee-joint was most frequently infected (64·2 per cent. of his cases). In 85 per cent. of his cases the condition was polyarticular and in 15 per cent. monarticular. Acute cases could be subdivided into four clinico-pathological types:—

1. Arthralgia, with no physical signs of disease in the joint.
2. An acute synovitis with an effusion of fluid into joint. In some of these the capsule and the periarticular structures are thickened and œdematous.
3. Acute arthritis involving the synovial membrane and articular cartilage with a sero-fibrinous exudate into the joint. In these cases the capsule and the periarticular tissues are nearly always attacked.
4. Acute arthritis with purulent exudate involving all the structures. This type is rare.

Subacute and chronic cases showed two clinico-pathological types:—

1. The synovial type involving especially the knee-joint, and simulating a tuberculous joint.

2. Polyarthritis involving both the synovial membrane and articular surfaces. This type attacks the small joints more readily; adhesions form easily and deformity results.

There were great variations in the symptomatology, but the main point in which most cases of gonococcal arthritis differed from arthritis due to other conditions was the tendency to involve all the periarticular structures and especially the tendon sheaths. Myositis was a common accompaniment, and the wasting of the muscles in association with chronic gonococcal arthritis was more pronounced than in tuberculous disease.

The main mistakes in diagnosis arose from failure to think of the gonococcus as a possible cause of the joint condition, and failure to examine the genito-urinary system for evidence of a focus of infection. In acute cases there was little difficulty; in subacute cases attention must be concentrated on the condition of the prostate and vesicles in the male, and on the upper genital tract in the female. In both sexes when there was no evidence of disease in the genito-urinary system an injection of gonococcal vaccine to provoke a focal and local reaction might assist in the diagnosis. The complement-fixation test for gonorrhœa, if positive, was also of assistance in diagnosis, and in his own series close on 80 per cent. of cases gave positive reactions to this test. A negative test did not exclude gonococcal infection. The test was most valuable in those cases in which the advantages of direct bacteriological proof were lacking. An intradermal skin test on the principle of the Pirquet test had been carried out in 1000 cases of gonococcal complications in his clinic and had given 80 per cent. of positive reactions, while there were only 0·6 per cent. of false positives; 98 per cent. of the cases of arthritis gave positive reactions. Radiographic examination of the joint was of little help in diagnosis, but was very valuable from the point of view of prognosis, and almost all cases could be cured in which there was no articular destruction on examination with X rays. The prognosis was excellent in all cases of acute and subacute arthritis, except in pyarthrosis; in the latter surgical interference was required, and there was generally some loss of function. In chronic arthritis the amount of recovery in the joint depended on the previous damage; the joint condition could usually be made stationary if the original focus of infection was eradicated. There was no justification for the pessimistic outlook of some authors who stated that acute arthritis seldom ends by resolution, and usually terminates in ankylosis. In the experience of Mr. Lees, a joint infection by the gonococcus if not effectively treated is apt to be attacked later in life by rheumatoid arthritis.

The complications which occurred in the cases under review were as follows: keratodermia, 12 cases; gonococcal pleurisy, 1 case; periostitis, 3 cases; spurs on the os calcis, 6 cases. Myositis was present in 80 per cent. of the cases and tuberculous infection of a gonococcal joint occurred in one case.

TREATMENT.

It was important (*a*) to treat the original focus of infection in the genito-urinary canal, and the zone to which it may extend locally; (*b*) to deal with the infected joint locally, and relieve pain and prevent adhesions; (*c*) to administer specific treatment through the blood stream to influence the blood-borne infection. In association with these three methods every effort must be made to raise the resistance of the patient. In every case, whether acute or chronic, the first essential was to treat the original site of infection. Many workers were carried away by their enthusiasm for treating the infected joint and countless surgical measures had been advocated. In acute cases only seven of his series had been operated on and in all of these a pyarthrosis existed.

In the treatment of the original focus of infection a great deal of attention had been given to sterilisation of the seminal vesicles by measures such as vasotomy and vasostomy, while others advocated vesiculectomy and vesiculostomy. More recently injection of antiseptics into the vesicle through the rectal wall had been advocated. While certain workers, especially in America, considered vasostomy an essential part of the treatment of gonococcal arthritis, Mr. Lees had found that these measures had not resulted in the striking cures claimed. In his opinion sterilisation of the vesicle alone would not eliminate the gonococcal infection completely, for the prostate gland and other areas were almost always involved. He had seen cases in which this operation had been performed by experienced surgeons, and he had been able to isolate the gonococcus in culture from the prostatic secretion after the operation. In the present series of 324 acute and subacute cases 98 per cent. were cured without any operation and the infected joint restored to good function. In chronic cases, which were resistant to other forms of treatment, there might be a field for vasostomy if the vas was still patent. Vesiculostomy and vesiculectomy could not be expected to clear up destructive lesions in the joint and cartilage.

Of recent years diathermy had been widely advocated as a means of producing deep-seated heat throughout the tissues without leading to any chemical change in the tissues. The tissues could be raised to a temperature of 112° F. to 114° F., which was stated to be lethal for gonococci. Mr. Lees thought that diathermy alone applied to the prostate and seminal vesicles was not a cure for gonococcal infection of these areas. Diathermy applied to the original focus of infection and at the same time to the joints relieved the pain, reduced the swelling, and assisted in vascularising the parts. After working with this method for six years, he was not satisfied that it was an absolute cure for gonococcal arthritis; it was, however, a helpful adjuvant method in association with other forms of local and focal treatment. It was even more helpful in subacute and chronic cases than in acute, but did not enable us to dispense with massage of the prostate and vesicles, or with voluntary and passive movement of the joints with a view to restoring them to full function. It was not in itself a complete cure of either the prostatic or vesicular infection or of the joint infection.

The various operations on the joint included joint puncture and aspiration, incision and lavage, and incision and drainage. In view of the excellent results obtained by the speaker by conservative treatment of the joints, there appeared to be a very small place for operative treatment, except for relief of tension, and in cases of gross purulent arthritis. If radiography of the joint showed no cartilaginous destruction the best local treatment was undoubtedly fixation during the hyperacute stage to relieve pain. At the earliest possible moment, however, voluntary and passive movements should be instituted and this should be followed later by massage. Active and passive movement was one of the most important factors in restoring the joint to complete function. In chronic arthritis it was necessary to have the coöperation of an orthopædic surgeon to advise the measures which might be taken, surgically or otherwise, to obtain the best functional results in the joint.

VACCINES AND CHEMOTHERAPY.

In speaking of specific therapy through the blood stream, Mr. Lees discussed the use of vaccines, of sera, and of the various proteins and chemotherapeutic substances which had been tried. A very large percentage of acute and subacute cases reacted well to vaccines, and a detoxicated gonococcal vaccine used in conjunction with other methods of treatment gave consistently good results. In any case which was hanging fire, or if a mixed infection was present, he advocated combining this vaccine with an autogenous vaccine. In very resistant cases he had good results from the combination of vaccines and proteins as in the preparations arthrigon and gono-yatren. In chronic cases protein shock was more valuable than in acute cases and he advocated the use of a protein, such as milk, alternating with the vaccine.

The chemotherapeutic substances which he found most useful were the 914 preparations, and in minute doses he had found them of considerable value in cases of arthritis complicated by keratodermia. In chronic arthritis, intravenous injections of sodium iodide were often helpful. He was not impressed with the result of injections of ortho-iodoxy-benzoic acid.

Apart from the eradication of the original focus of infection, the important points in treatment, Mr. Lees said, were immobilisation for a short period to relieve pain, early mobilisation to assure recovery of joint function, local applications to relieve pain, and Bier's congestion for this, and to create a passive hyperæmia. Passive hyperæmia was also useful in chronic cases and mild counter-irritation increased the blood-supply and assisted in the absorption of inflammatory products. Only seven cases had required operation. In such cases free incision and washing out of the joint with eusol or with a solution of formaldehyde in glycerin was best. The operative measures advocated were often far too complicated, and in his experience very few acute or subacute cases of gonococcal arthritis required any operative interference. In chronic cases operation was required to correct deformity.

SUMMARY.

Summarising his observations Mr. Lees said that among 13,000 cases of gonorrhœa, arthritis occurred as a complication in 388 (2·9 per cent.). The original focus of infection in men was usually in the prostate gland and seminal vesicles; in women in the urethra, cervix, Bartholinian gland, and Fallopian tubes. Operative treatment was rarely required, in either acute or subacute cases, either on the vesicle or on the affected joint. The prognosis was good in all acute and subacute cases. In 324 acute cases there was one death; in 276 there was complete restoration of function and no evidence of the previous joint infection; and in 17 there was slight limitation of movement with a good functional result; while 30 of the cases were transferred to other hospitals or did not complete their treatment. The result in 64 chronic cases varied with the degree of involvement of the intra-articular and periaricular structures. Freedom from pain was usually obtained and a better functional result. Freedom from recurrence depended on clearing up the original focus.

MENTAL DEFECTIVES AT PORTSMOUTH.—A colony for mental defectives is to be erected on Portsdown Hard. There will be 320 beds, and the scheme will cost £123,000. The total annual charge is estimated at £27,314 against a present charge for mental defectives of £17,789.

MEDICAL SOCIETY OF LONDON.

AT a meeting of this Society on March 9th Dr. R. A. YOUNG took the chair and a discussion on the

Treatment of Lobar Pneumonia

was opened by Lord DAWSON, whose paper appears *in full at p. 625.*

Prof. W. H. WYNN (Birmingham) said that reaction to a vaccine only occurred in a sensitised person whose cells were allergic. If the specific antibodies were not present there was no sensitisation and reaction was impossible. Specific antibodies were present in all states of chronic infection, but in acute infections they were only present after a certain interval had elapsed, for their formation was comparatively slow. The problem was to try to produce an early rise in antibody formation and early immunity when the intoxication curve was rising and was more easily overtaken. A vaccine, however, had the immediate effect of producing non-specific antibodies. Sir Almroth Wright had shown that by adding non-specific antibodies the blood became highly bactericidal; and it was this non-specific form of immunity which was exploited in the early treatment of acute infections. The object of the vaccine treatment of pneumonia was to cause immunity while the curve of toxæmia was rising and while the leucocytes were vigorous and able to respond—i.e., while the circulation of blood through the lung was unimpeded. Pneumonia should be regarded as an acute emergency, the object being to control the infection before it got out of hand, and to prevent the onset of symptoms which it would be impossible to treat. The result in the treatment of a case of pneumonia depended largely on what could be done in the first 48 hours. For lobar pneumonia Prof. Wynn used a vaccine containing only the pneumococcus; for influenzal broncho-pneumonia he used one containing equal numbers of pneumococci, streptococci, and influenza bacilli. When he was not certain whether the pneumonia was lobar, he used the mixed vaccine. For the adult the usual dose was 100 millions of each, but he often used twice or even three times that dose, and for children larger doses than would seem proportional. Injections should be made as early as possible, and it was an enormous advantage to have the vaccines always at hand. If injection was done in the first 24 hours, the temperature would usually fall within 48 hours, this rapid defervescence being one of the most striking and dramatic happenings in the range of therapeutics. If injection was delayed to the second, and especially the third day, it was much more difficult to overtake the infection. At a still later stage, when the lung had become solid, there was little chance for this or any other form of treatment. Prof. Wynn showed a series of slides of charts of cases of penumonia and other infections to establish the general principles underlying vaccination against acute bacterial conditions.

Dr. R. A. O'BRIEN said he was still far from convinced about the efficacy in pneumonia of antipneumococcal serum. But for 20 years he had been working at serology, and he would be much disappointed if serum treatment did not prove one of the things which had come to stay. Avery and others had arrived at the conclusion that when serum was given the progress of the disease was stopped, usually after one or two doses. Avery and Cole summed up their results in 400 cases treated at the Rockefeller

Institute by saying that the mortality was about 10 per cent. They used unconcentrated serum from horses. After speaking in detail about various laboratory tests and the processes of titration, Dr. O'Brien enlarged on the difficulties in the way of national provision for the control and treatment of these cases.

Dr. NATHAN RAW spoke of treating 250 consecutive cases of penumonia, most of them lobar, with the Burroughs Wellcome stock pneumococcal vaccine. In some of the cases the result was dramatic, and the total mortality was 3 per cent. better than in the ordinary run of cases. But a stock vaccine was largely a shot in the dark; and he felt that if a vaccine made from the particular pneumococcus causing the disease in the individual patient could be provided, the results would be extremely good. He had been told that there were 30 distinct varieties or types of pneumococci. When in the cases he treated he could get autogenous vaccines made, there was a striking result. In most cases brandy gave good results.

Dr. R. S. JOHNSON spoke of the results achieved by himself, in conjunction with Dr. Richard Armstrong, in the serum treatment of pneumonia. The effort was to introduce as much serum as possible in the first 24 hours, allowing a sufficient interval between the injections for the patient to recover from the reaction, and so as to avoid overloading the tissues with a foreign substance. The ideal interval was eight hours. The features considered when deciding whether to leave off the treatment were the clinical condition and degree of toxæmia, the subsidence of the pyrexia, and the leucocyte count. Immediate shock or collapse following the treatment was very rarely seen, and anaphylactic shock in only one case—namely, in type 2. The temperature in the reaction reached 104° and 105°F. In some of the cases death seemed to have been definitely averted.

Dr. R. ARMSTRONG supported what Dr. Johnson had said, emphasising the striking improvement in the patient's condition which resulted from the treatment; anoxæmia, restlessness, the toxic appearance, and the delirium were markedly reduced. He hoped and believed, with Park, that this serum had come to stay. He hoped that shortly the London County Council would institute laboratories from which the serum could be supplied to every practitioner.

Dr. WALTER BROADBENT spoke of his experiences with a very efficient antipneumococcal serum in Italy during the war, and agreed with all that had been said as to the dramatic result when the serum was potent.

Dr. C. B. HEALD asked whether the opener and others had tried diathermy in the treatment of pneumonia.

Prof. WYNN, in the course of his reply, said that much of the action of serum was the non-specific action of a protein. Speaking of alcohol, he said that in the epidemic in February, 1929, he had two wards, and every patient on one side of each ward had alcohol as a routine—so much brandy or whisky every four hours—those on the other side of the ward having no alcohol. The patients were admitted under the same sisters and in the same stage of the disease. Among those who had alcohol the mortality was 68 per cent., while among those who did not have alcohol the mortality was 21 per cent.

Lord DAWSON, in his reply, deprecated the routine use of alcohol in the disease; it should be reserved for the restless anxious patients who could not sleep. He insisted on individuality in treatment and assessment of patients' condition, which was the essence of successful clinical work. The physician's mind should not be allowed to stray too much on statistics. He thought too much stress was laid on the value of autogenous vaccines in acute infections, but the results placed before the meeting by Prof. Wynn had impressed him very much.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

AT a meeting of this Section on Feb. 20th Dr. A. H. DAVIDSON, the President, took the chair, and Dr. O'DONEL BROWNE read a paper on

Anæsthesia in Labour

by the method of Gwathmey. The routine treatment, he said, consisted of a hypodermic injection of morphia gr. ¼ and 2 c.cm. of 50 per cent. magnesium sulphate solution as soon as labour was definite in a multipara or as soon as the os was three-fingers dilated in a primipara. Twenty minutes later another 2 c.cm. mag. sulph. was given. The ears were plugged and when the analgesic effect of these drugs was wearing off, anæsthesia was induced by rectal injection of a mixture of anæsthetic ether 2½ oz., quinine alkaloid grs. 20, absolute alcohol ♏ 40, and olive oil 2 oz. This was given slowly between the pains. Twenty minutes later a further dose of 2 c.cm. mag. sulph. was given intramuscularly. It was found that mag. sulph. prolonged the action of the morphine without increasing its toxicity. Rectal ether instillations were repeated whenever necessary throughout labour. Labour progressed normally, and the coöperation of an analgesic patient assisted greatly when any manipulation was needed. In one case of uterine inertia the patient was under anæsthesia for 37 hours, with no ill-effects to mother or child. No bowel complications were noted and the puerperium showed no abnormality No cases of asphyxia neonatorum occurred and lactation was easily established. There was one stillbirth due to prolapse of the cord, and one patient became morbid, owing to mastitis. The results were that 97 per cent. of cases derived benefit. Rectal ether appeared to be 30 per cent. more efficient than "twilight sleep," and was without danger to the infant. Two per cent. of patients treated were unaware of any pain from the first injection of morphine and mag. sulph., and this method of relieving pain during a long period was undoubtedly far in advance of any other means in use at the present day.

Dr. G. E. P. MELDON said that he regarded rectal ether as an extremely satisfactory anæsthetic, but had found that in patients who came into hospital early on the morning of operation, or on the previous evening, it was not so successful. He thought the reason for this was that the bowels were not properly cleared out. As a routine, he put a catheter into the rectum, gave the injection, and left the catheter in. He had never seen any rectal trouble follow the injections.

Dr. D. G. MADILL pointed out that Beckenham said there was no synergism between magnesium sulphate and morphine, whereas Gwathmey said there was.

Dr. T. M. HEALY said that when Gwathmey's paper on anæsthesia in labour first appeared in 1923, some cases had been treated in this manner at the Coombe Hospital according to Gwathmey's technique. The results obtained were somewhat disappointing. Since the stronger solutions of magnesium sulphate had been introduced in 1924, however, he (Dr. Healy) had been more satisfied with the results obtained. Some patients had scopolamine-morphine anæsthesia in one labour, and Gwathmey anæsthesia in another, and seemed to think that the quinine was the less nauseating. Magnesium sulphate was now always given intramuscularly, though this was not done when the method was first started. He had seen no cases of difficulty in the third stage of labour, and no difference in the stillbirth-rate since this method of anæsthesia had been used. He regarded it as a good method, but said that quite a large number of patients objected to rectal instillations.

Dr. D. V. MORRIS said he had been using Gwathmey anæsthesia for some time, and in private practice regarded it as very successful. He personally was content if he got analgesia.

Dr. F. W. DOYLE said he had never tried Gwathmey anæsthesia, but it seemed to him that in using it a tremendous number of different drugs were being introduced into the patient. He felt that at present it was a rather tentative method. In some cases he believed the patients developed very severe colitis as a result of irritation by the ether. He thought that in many cases ether was a bad anæsthetic to employ. He preferred gas and oxygen, preceded by twilight sleep.

Dr. R. W. SHAW said he had never used Gwathmey anæsthesia in obstetrical cases, but had used it in other cases. The technique was rather complicated, and it took a long time to produce anæsthesia. He thought that avertin anæsthesia had more possibilities than Gwathmey anæsthesia. In a recent case of his own the patient had complained of great pain when ether and oil was injected.

Dr. BETHEL SOLOMONS said that when he had suggested to Dr. Browne that he should study the Gwathmey method of anæsthesia in labour, he was anxious to find out if it could be of general use, not only to the specialist but to the general practitioner. Dr. Browne had demonstrated certain very definite points, even though the number of cases was small. It was extremely difficult for the assistants at the Rotunda to devote a great deal of time to such cases. The routine work was heavy, and the isolation wards, necessary for such an investigation, were not always available. He had shown the results in 41 cases, and as there were approximately 6000 confinements in the hospital in the time under review, it seemed to show that the method was not one for the busy general practitioner. In fact, in spite of the excellent work of Gwathmey and his disciples, Dr. Solomons did not see that this method would be any more universal than twilight sleep. Both had disadvantages and advantages. He believed that the ideal anæsthesia was gas and oxygen, but where this was not available, ether was the safest. It had been proved that quinine given according to Gwathmey was not dangerous for the child, and he had seen no danger to the child in the oil-quinine method for inducing labour.

Dr. A. H. DAVIDSON said that Dr. Browne's conclusions seemed to bury the quinine bogy. He had never seen a case in which quinine had done any harm to the baby.

Dr. SOLOMONS described some preliminary investigations on the value of the Fouchet test in the toxæmias of pregnancy, Dr. HEALY showed specimens from a case of abdominal pregnancy, and Dr. D. CANNON read notes on a case of Erb's paralysis.

REVIEWS AND NOTICES OF BOOKS

Le choc anaphylactique

et le principe de la désensibilisation.

By A. BESREDKA, Professeur à l'Institut Pasteur. Paris: Masson et Cie. 1930. Pp. 276. Fr.30.

IT is now many years since this author produced a short but excellent personal monograph upon anaphylaxis which was translated into English. The present volume is, to some extent, a repetition of the former work, giving an up-to-date résumé of the history, facts, and theories of anaphylaxis. Like its predecessor it is well worthy of translation. The subjects dealt with include the historical aspects of anaphylaxis; protein sensitisation; anaphylactic shock; the question of sensitisation by other substances, bacterial anaphylaxis, serum sickness; and the conditions which loosely revolve about the orbit of classical anaphylaxis and are variously referred to as atopy and allergy (Besredka does not use these terms). The prevention of shock and methods of desensitisation are very thoroughly dealt with, both with respect to serum administration and the question of the treatment by desensitisation of food idiosyncrasies and other clinical examples of hypersensitivity. The book closes with a discussion of the various theories of anaphylaxis. The author has a good deal to say about the Friedberger-Bordet anaphylotoxin theories; most of it damaging. His review of the many hypotheses which have been put forward is, on the whole, a fair and careful one. It is not unnatural that many of his own views should be dominated by his *results* with cerebral anaphylaxis—a subject practically untouched in this country—upon which little work seems to have been done anywhere except in Besredka's laboratories. It is a matter which we should like to see further investigated by another school of workers, since so much of the edifice of argument erected here depends upon the detailed confirmation of the author's work in this particular field. Besredka's own theory of the causation of anaphylaxis is summarised in the following words. Speaking of the assumed interaction of antigen and antibody, he says: "their affinity has the effect of setting up an instant reaction; whether this reaction disrupts the equilibrium of certain nerve cells in the vicinity of which the combination takes place, or whether this latter is accompanied by the setting free or absorption of calorific or other form of energy, we are faced with a constant and unvarying series of phenomena which constitute anaphylactic shock." Apart from an expression of opinion that the nervous system probably plays a leading part in the production of shock, this does not seem a very lucid contribution to the explanation of these difficult phenomena. The book, is, however, well worth reading by those who are interested in anaphylaxis. It can hardly fail to stimulate questions and to suggest further lines of thought. There is no index, but adequate summaries of the contents of each chapter are supplied.

Early Theories of Sexual Generation.

By F. J. COLE, D.Sc., F.R.S. Oxford: Clarendon Press. 1930. With 22 illustrations. Pp. 230. 15*s.*

IT is only since about the middle of the nineteenth century that it has been agreed that the essential fact of sexual reproduction is the union of egg with spermatozoön, and the development of the new individual from the cell so formed. The essential male and female elements were identified in the seventeenth century when microscopes became available, and their relative share in reproduction was for long a matter of doctrinal dispute. Most people held that the growth and differentiation of the embryo consisted in a simple unfolding and expansion of what was there already, and, convinced of the fact of preformation, observers drew on their imaginations and saw homunculi either in eggs or spermatozoa according to their fancy. The greater part of Prof. Cole's account is concerned with the various phases which this preformation doctrine went through till it wilted away under its own absurdities and the realisation that Aristotle's epigenetic notions were probably right after all. But it was worth treating in detail with all the wealth of learning and scholarship which Prof. Cole brings to the task, partly for its own sake, and partly because in recent times the gene theory of inheritance has afforded a possible line of reconciliation between it and epigenesis. It is certainly not true that a spermatozoon if sufficiently magnified has the appearance of a respectable citizen; it may be true that the chromosomes consist of definite particles each one of which is concerned in developing a part of the adult body. The tale therefore is not wholly dead, and for the author's way of telling it we must all be grateful. Mr. Clifford Dobell contributes the first English translation of Leeuwenhoek's letter of 1677 to the Royal Society announcing the discovery of spermatozoa; the list of references runs to 17 pages.

Tropical Medicine in the United States.

By ALFRED C. REED, M.D., Professor of Tropical Medicine, Pacific Institute of Tropical Medicine within the George Williams Hooper Foundation for Medical Research of the University of California. London: J. B. Lippincott Company. 1930. Pp. 410. 25*s.*

IN the United States many tropical diseases are endemic and assume a serious character, for example, hookworm infection, malaria, amœbiasis, bacillary dysentery, sprue, pellagra, and plague; others, such as undulant fever, have a sporadic distribution, while oriental sore, trematode infections, leprosy, and filariasis are constantly being imported by foreigners. For the practitioner working in America, therefore, tropical diseases have more than a passing interest and so it is essential for him to possess a short practical clinical guide to their diagnosis and treatment. It is from this point of view that the present volume has been written. Certain typical tropical diseases, such as African trypanosomiasis, are not dealt with at all, while detailed parasitology is omitted. The descriptions are for the most part clear and intelligible, and the author has been wise in avoiding too much detail in regard to ætiology and diagnosis, but in handling of the all-important section of treatment his methods are less successful, for the accounts are too meagre to be useful. We note also a lack of healthy scepticism in certain respects. For example, diseases such as bronchial spirochætosis and bronchomycosis, whose very existence is doubted by some authorities, are described as if they were as important as well-recognised entities like yellow fever and rat-bite fever. The illustrations are mostly photographs and are not very satisfactory.

Les phénomenès de choc dans l'urticaire.

A Clinical and Therapeutic Study. By PASTEUR VALLERY-RADOT and LUCIEN ROUQUES. Paris: Masson et Cie. 1930. Pp. 232. Fr.35.

Pasteur Vallery-Radot is a worthy successor to the great French workers Bordet, Abrami, and Widal in the field of serology, and this book most ably summarises the published work on the phenomena of shock in urticaria. The subject is of outstanding importance, not only in dermatology, but in its broader aspects, which include the problem of asthma, and the intricate interactions of the sympathetic nervous system and the endocrine glands. We are only at the fringe of the therapeutic possibilities that may yet ensue, and the profession will do well to avail themselves of this opportunity for a realisation of the facts so far established.

The contents are divided into two parts. In the first, a clinical part, are discussed in detail the meaning of anaphylaxis, colloidoclasia, and the humoral changes that precede and accompany the urticarial attack. The various causes of urticaria are explained in the seven succeeding chapters. They include alimentary, medicinary or drug urticaria, parasitic urticaria, and that due to emotion, effort, heat, and cold. The second part of the book is devoted entirely to treatment and occupies 75 pages. The condition is sometimes intractable, and the reader of this book will be grateful for the many and varied remedies set out. The bibliography cited is immense, and the mere tabulation of the authors' names take four and a half pages of small print. The work is really valuable.

Antenatal Care.

Second edition. By W. F. T. HAULTAIN, M.B., and E. CHALMERS FAHMY, M.B., Assistant Physicians, Royal Maternity Hospital; and Assistant Gynæcologists, Edinburgh Royal Infirmary. Edinburgh: E. and S. Livingstone. 1931. Pp. 127. 5*s.*

So well has this book fulfilled its purpose that within two years of its first appearance its authors have been given the opportunity of revising and rearranging its contents in a new edition. Short chapters on Maternity and National Health benefits and on postnatal care, together with a brief description of the Aschheim-Zondek test for pregnancy, have been added, but otherwise the text remains as before, even to "aequous solution" on page 110. The chapter on postnatal care discusses most of the common troubles following confinement, and, so far as it goes, will be useful to clinic workers, but is too slight to take them far. Its practical value would have been greatly increased if, for instance, some details had been given as to the nature of the remedial exercises recommended for backache. The chapter of a page and a half on insurance benefits is excellent and might well have been extended to include other forms of public assistance for the childbearing woman.

Our real regret is that its authors have not seen fit to make their book cover the wider aspects implied in antenatal care and still restrict their view to its purely medical side. True, the decision of what should or should not be included in a small manual of this size is undoubtedly a problem. And the subject is an integral part of midwifery and in so intimate a relation with its whole practice that it is difficult to determine those portions that can be separated out as being, to use the authors' words in the preface to the second edition, within "the province of the title of the book." But one matter, clearly within its province, and indeed essential to an adequate presentation of its title, is that it should give a proper perspective of all that is comprised in antenatal supervision, and that cannot be done if the social and educational aspects are left out of the picture. Drs. Haultain and Fahmy have written from the standpoint of the obstetric specialist and from that of the hospital or consultative clinic. Thus they have devoted several pages to the intranatal and curative treatment of developed eclampsia, placenta prævia, and other conditions that belong rather to the labour ward than to the antenatal clinic and ward. If an authoritative ruling on this matter is required, reference may be made to Memo. 156/M.C.W., recently issued by the Ministry of Health, where there is a ministerial pronouncement that the antenatal clinic has a two-fold function: (*a*) medical and nursing, and (*b*) educational and social. We make this suggestion because it is probable that another edition will soon be called for; the teaching in the book is otherwise sound, and it seems unfortunate that it should represent but a one-sided view of antenatal care.

The Materials of Life: A Simple Presentation of the Science of Biochemistry.

By T. R. PARSONS, M.A., B.Sc. London: G. Routledge and Sons, Ltd. 1930. Pp. 288. 10*s.* 6*d.*

MR. Parsons has attempted a difficult task. He aims, as he says, "to give an account that everybody shall be able to understand of the materials of which living things are made, and of the complex but fascinating changes that these materials undergo during life." He has succeeded but moderately well. We can imagine very few laymen who would work their way through such a detailed narrative. The serious student, on the other hand, will need something more solid. The book might be useful to medical men whose physiology is long out of date, though they *must not expect to find anything about stomach-ache* in the chapter headed "Digestion and Indigestion" which is simply an account of the normal process. As one would expect from the author, the information given is accurate and up to date, though there is a first-rate howler on page 100 where bread and butter is called a protein-free diet.

Pleasure and Instinct.

By A. H. BOULTON ALLEN. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1930. Pp. 336. 12*s.* 6*d.*

THIS volume bears a title which does not do it full justice. It contains a careful and thoughtful analysis of the major instincts—reproduction, curiosity, gregariousness, and the impulse to power. All the outstanding theories of pleasure-pain are described and discussed, and the relationship of the psychology of feeling to sensation and instinct is argued with considerable skill, and much illumination of an obscure subject is the result. In so far as any discussion on feeling is incomplete without a consideration of the nature of æsthetics and values, these somewhat philosophical subjects are dealt with also in an up-to-date and succinct manner. From the point of view of psychological medicine, the chapters on instincts and their relationship to feeling will reward reading and study.

The Formenkreis Theory
and the Progress of the Organic World.

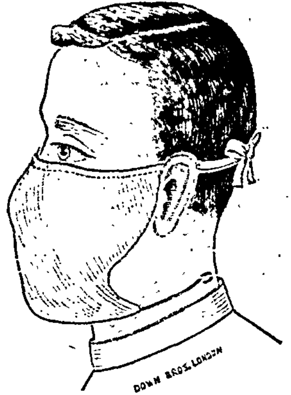
By O. KLEINSCHMIDT. Translated by F. C. R. JOURDAIN. London: Witherby. 1930. Pp. 192. 10*s.* 6*d.*

THIS book ought not, we feel, to have been translated without clarification and condensation. It is a confused statement of the author's belief that "real species" of animals date much further back in evolution than has been supposed, though it is not clear whether he is prepared to go the length of multicentric origins. There are many querulous complaints that everyone does not agree with him.

NEW INVENTIONS

A SIMPLE FACE-MASK FOR ACCOUCHEURS.

THE belief that many cases of puerperal sepsis result, either directly or indirectly, from infection from the throats and noses of those who are in attendance upon the cases and who are "carriers" of virulent organisms has been growing in strength during the last few years. Therefore it has become necessary that some efficient means should be devised for *protection from droplet infection.* A good maternity mask should conform to the following requirements: (*a*) it should be cheap; (*b*) comfortable to wear; (*c*) it must be efficient to prevent the passage of organisms through it; and (*d*) it should be easy to sterilise.



The mask here illustrated has been submitted to Dr. Leonard Colebrook, of the Inoculation Department of St. Mary's Hospital, to Prof. Miles Phillips, of Sheffield, and to Prof. Beckwith Whitehouse, of Birmingham, and on their advice and criticism it is submitted for general trial. The mask consists of a piece of jaconet attached to a strip of flexible aluminium, to the ends of which tapes are attached, which are tied round the back of the head. The strip is moulded by the wearer to the shape of his nose and face. To the lower side of the jaconet is attached a light, open, metal neck-spring, which serves to prevent the mask from flapping forward when the wearer bends forward. The mask can be sterilised by simple washing in a strong antiseptic solution. It is germ proof, does not fog the glasses, can be worn in any place, and is reasonably comfortable to wear. The price is modest.

Messrs. Down Bros. Ltd., St. Thomas's-street, S.E., are the manufacturers.

HOWARD E. COLLIER, M.B., Ch.B. Edin.

THE LANCET.

LONDON: SATURDAY, MARCH 21, 1931.

DOCTORS AND MILITARY SERVICE.

In the House of Commons last week, in Committee of Supply on the Army estimates, Dr. F. E. Fremantle made a statement upon the shortage of medical officers in the Army which deserves close attention, all the more because he did not confine himself to lamenting a position which is known by everybody to exist, but went on to make constructive proposals. For these he hoped to get the endorsement of the War Ministry, and the actual figures which he adduced were striking enough to warrant that expectation. It seems that an establishment of 823 is now 173 short, or, roughly, 20 per cent. Upon certain of the reasons for this ominous plight of the Service there is no doubt, and it is obvious that they will continue to work with increasing effect unless they are arrested. The forces abroad must have their quotas kept up, therefore the present officers of the R.A.M.C. are perpetually on foreign service, and thus are largely prevented from marriage or from entering into any social ties which they might desire to make. Consequently, and at the earliest opportunity, many seek retirement and, as this occurs chiefly among the juniors, while it aggravates the shortage it produces a want of balance in the Service. Next in importance to the conditions of the life comes the scale of pay. It is not such as to invite recruitment and act as a counterpoise to the disinclination which may be felt towards entrance upon a disciplined career, which must always have its objections in a profession where the best expressions are often individual in character. On the matter of pay Colonel Fremantle reminded the House of Commons, as that House and the public have been reminded over and over again, that the claim of the medical officer to be especially considered in any of the military Services in the matter of remuneration has this firm foundation—the entrant has pursued for a period of at least six years a difficult educational course at his own expense before the country begins to pay him anything. In France the young doctor becomes a military officer for the last three years of his training.

The state of affairs, once again brought prominently before the public attention, cannot be remedied easily, but this is no reason why immediate attempts should not be set in hand to remedy it. The position is growing worse and worse, and although the R.A.M.C. is brought up here as a text analogy can be found in the position of the medical officers in the Royal Navy and the Royal Air Force. The figures have not been made public so clearly, and exactly what the needs of the Navy are, for example, is not apparent, but the decline in disease among those employed overseas, which was marked a few years ago, is not being maintained, and the assumption that these things are in relation is legitimate. That commissions in the Navy should still prove unattractive is puzzling, for undoubtedly there is much to encourage the right type of medical man to join the Service. There are many specialist appointments for the naval medical officer. Good opportunities, we believe, whenever the exigencies of the Service will permit, are given for post-graduate study leading to the higher qualifications; and if the pay is not high the cost of living in the Navy is low. Nonetheless a considerable degree of shortage is known to exist, and the fact is pertinent to Colonel Fremantle's scheme of remedy—namely, a combination of the medical officers of the Navy, Army, and Air Force into one Service. This is a variation from the old proposal of fusion of the R.A.M.C. with the splendid Indian Medical Service, which of course is no longer practicable; but the place of the I.M.S. Colonel Fremantle thought might be taken by the Colonial Medical Service, and the whole combination be reinforced by entering into relationship with the medical officers of the Home Civil Service. The main advantage of such a consolidated union would be the wider sphere of professional prospects, so that a far larger number of young medical men would fall under its appeal. It is easy to see that under such a union the inequalities of foreign service might be adjusted with greater facility, while certain money subventions from the State would automatically accrue to it. Statements that there must be a formidable amount of reorganisation before such a union is feasible will not be regarded as a sufficient reply; and none of Colonel Fremantle's words made a more forcible appeal to the House than those in which he pointed out that the scandals and tragedies associated with the South African war, largely due to a shortage of medical officers in the Army, might occur again.

As the shortage of officers in the R.A.M.C. has recently been confessed in a White Paper issued by his own Department, the Minister of War had no embarrassment in acknowledging that Colonel Fremantle's picture of the situation was unexaggerated, but he took the view that the disadvantages of the career of the R.A.M.C. officer, as detailed to the House, might not account in a capital manner for the shortage which all deplored. He found in the fact that the openings under the National Insurance Acts were well paid an inducement to many young medical men, who previously had been recruited for the Army or Navy, to remain in civilian practice. That has been said often and it is true. But it must not be used as a plea for inaction but rather as a spur to rivalry. Referring to the hope of any drastic reform that depended upon a large scheme of fusion the Min[illegible] demurred at expressing any view upon this [illegible] moment's notice." Here he was taking th[illegible] that many of his predecessors have ta[illegible] despair of many Medical Directors [illegible] big scheme cannot be debated with[illegible] the bigger the scheme the more is this obvious; but the determination to concert measures to meet a national peril can be taken at a moment's notice, and it is sincerely to be hoped that this is the frame of mind in which the Minister for War finds himself. The duties of England to a far-flung Empire, the responsibilities of the nation to the young men who serve her, the call of science for workers in all spheres—any and all of these are irrefutable pleas for the proper manning of these Services. Everyone knows these things. Cannot our rulers begin to face the administrative difficulties needed to obtain the necessary medical recruits?

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THE TREATMENT OF ECZEMA.

THE international congress at Copenhagen, last year, made it clear that the treatment of eczema has not kept pace with new knowledge of the ætiology of this puzzling and refractory disease. But if we have no strikingly successful therapeutic novelties the present outlook on the causation has shown that the remedies of four decades rest on a sure foundation, the nature of which has been partly revealed. Writing in retrospect, J. DANIER and A. TZANCK,[1] of Paris, point out that eczema must no longer be regarded as a toxiderma or an auto-intoxication. It is now "a reaction of intolerance by the skin," and if the term "reaction" is accepted and sustained as a premise, then we must also say that an agent sets the reaction going, that the subject or organism is susceptible or sensible to the agent, and that there is a latent mechanism of sensibility, either inborn or acquired. We are then in a position to attack either: (*a*) the reaction itself (the actual lesions) by local treatment; (*b*) the agent (antigen) by suppressing it; (*c*) the reacting factors of the organism (*reagines*) by inactivating them, by protein shock medication; (*d*) the mechanism of the reaction, by desensitisation; or (*e*) the susceptibility, by prophylaxis. No one will question the desirability of adopting the first procedure in almost every case; it is very necessary to soothe and by every means allay the local disturbance, and often the results are highly satisfactory and equivalent to cure. To ascertain the cause, however, is very often difficult. It is usually evident only in cases of dermatitis due to trade or profession, and even if it is discovered it cannot always be excluded entirely from the environment or the food. In such cases the object must be to make the patient capable of normal resistance—i.e., to desensitise him either by protein shock, in which we presume to disorganise the reaction itself, by desensitisation in a specific sense, or by general preventive treatment which includes elimination of focal sepsis, autotoxæmia, hyperglycæmia, and the like.

Rest is as important in the treatment of eczema as in other diseases, and a second item is the clearance of surface contamination or crusting by moist compresses, containing bland or slightly antiseptic solutions, such as Alibour's fluid (½ per cent. copper and zinc sulphate). This accomplished we may continue with creams containing water in relatively large proportion to their fatty content and to pastes or glycerin of starch with carbonate of magnesia and talc. The details of local treatment have to be varied in almost every case, and if the diagnosis is at fault, and such conditions as epidermophytosis or seborrhœa are ignored or missed, success can scarcely be expected. Of modern substitutes for topical applications, the only one which has proved consistently useful is X ray treatment, but this should be reserved for the type of case that will respond and not be applied without discrimination. Suppression of the cause of an eczematous eruption is an ideal seldom attained, and as DARIER and TZANCK remark, "is not its attainment an acknowledgment of defeat?" To forbid a baker or a polisher to continue at his trade cannot be regarded as a therapeutic triumph, even if it relieves him of his symptoms. In this connexion, too, the possibility of a parasitic or mycotic ætiology must always be kept in mind, and here the regions affected will sometimes provide a valuable clue; but great caution should be used in making a diagnosis of yeast or monilia infection, for these organisms are common saprophytes.

The great majority of eczema cases fall into one or other of the ætiological categories mentioned, and much rarer are those depending on a vascular (endogenous) antigen. The only really clear-cut examples of these are the infantile eczemata which not infrequently clear up when the infant is removed from the breast and dieted on controlled foods. Nowadays it is thought important to recognise a susceptibility in early infancy, for neglect to do so exposes the patient to a risk of so-called polyvalent response in later years, and makes elucidation of the cause increasingly difficult. Desensitisation may be attempted with the actual antigen—e.g., egg or wheat protein—in minute increasing doses at stated intervals *either* intradermally, subcutaneously, or per os. The technique is somewhat complex, the results are by no means always constant or permanent, and serious reactions have been encountered from time to time. The non-specific protein shock methods aim at disengaging the presumed mechanisms of interaction (antigen-antibody) by introducing a foreign protein. By frequently repeating their introduction one exhausts the stock of *reagines*, and the resultant eczematous attacks along with them. The agents available in this connexion vary from the mild but often successful autohæmotherapy (whole blood intramuscular injections) to intravenous injections of a typhoid vaccine which has been employed in this country especially in the treatment of chronic urticaria. A simple and harmless method of this kind is the administration of peptone by the mouth before meals, but it is likely to be useful only where the provoking antigen is a protein of animal origin. On the whole, experience suggests that the safest and most generally successful of shock methods is autohæmotherapy.

The nervous system undoubtedly plays a part in the genesis of certain types of eczema, and much has been written in recent years on the importance of sympathetic and parasympathetic influences. To what extent these factors are primary is uncertain, but in vagotonic cases improvement of the symptoms can sometimes be demonstrated after administration of atropine or belladonna, while the sympatheticotonic respond to ergotamine or stimulation of the vagus action by pilocarpine, which is frequently prescribed on the continent. Where the nervous element predominates bromides are useful, and are best given by the intravenous route as 10 per cent. sodium bromide, or in the well-known proprietary preparations. Occasionally brilliant results are obtained by administration of endocrine extracts, but until biochemical methods of investigation are standardised the effects will remain inconstant. An empirical remedy much favoured by dermatologists at the present time is sodium thiosulphate. It is given in doses of 0·45 to 0·75 g. by the intravenous route, and the dose can be repeated daily without danger for weeks at a time. DARIER and TZANCK summarise their advice under the following headings: (1) soothing and protective local treatment in all acute cases; (2) determined attempts to elucidate the cause, remembering that it may be chemical, physical, traumatic, parasitic, or microbial; (3) treatment, ad hoc, when the cause is proved; (4) elimination of focal sepsis; (5) suppression of preventable causes, as in trade or alimentary cases; (6) investigation of vagosympathetic and endocrine faults and deficiencies; (7) recognition of acquired or hereditary dyscrasias and substrata, such as congenital syphilis or chronic infections; (8) attempt to desensitise the patient by accustoming him to the specific antigen, or by non-specific shock methods.

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[1] Presse Méd., Jan. 17th, p. 73.

"KINETIC" TREATMENT OF THE EYES.

WHAT is to be done when symptoms of eyestrain persist in a patient after all errors of refraction and of muscular balance have been efficiently corrected by appropriate glasses? An answer to this question is propounded by Mr. N. A. STUTTERHEIM[1] who maintains that a not infrequent cause of eyestrain is a defect in the amplitude of convergence and that this is in a large proportion of cases curable by appropriate exercises with prisms. He distinguishes between voluntary convergence and what he calls involuntary convergence. The former is measured by the perpendicular distance from the base line between the two eyes at which they are able to fix a point without diverging, and the latter is measured by the strength of prism which can be tolerated when both eyes are fixing a distant point, without diplopia being produced. The range of convergence is the sum of the two strongest prisms which can be tolerated, the one tending to cause divergence, the other convergence. This sum, for most people, is represented by a prism with a principal angle of somewhere about 20° but is capable of being increased by practice to 50° or over.

Mr. STUTTERHEIM, in a systematic investigation of his patients, found it generally true that the range of involuntary convergence in those with symptoms of eyestrain was on the whole much less than in those without such symptoms; that training with prisms invariably increased the range, and that in those sufferers from symptoms of eyestrain who had a small range the results were invariably good. The actual exercises must be controlled by the surgeon or some skilled person. First the prisms base in, and then the prisms base out are placed before the patient's eyes and rapidly changed until diplopia ensues, the process being repeated three or four times and the number of the highest prisms tolerated noted for use first at the next sitting. The same process is repeated daily for as many as 40 days for some patients. Generally 12 days of "kinetic" treatment are found to be sufficient to overcome insufficiency of involuntary convergence. It is claimed that as the function is restored headaches, tiredness during work, and other depressing sensations disappear, and that the improvement to binocular eyesight is often remarkable.

What is the theoretical justification of this procedure? In the higher vertebrates lessening of the divergence of the optic axes goes together with a gradually increasing bilateral representation of the retina in the brain. In man the semidecussation of the optic nerves is complete, the efferent neuromuscular condition of this high development being the involuntary convergence of the foveæ of the two eyes on an identical spot. This is a late development phylogenetically and therefore is not such a well-established reflex act as for instance the older reflex of accommodation. To work smoothly and with the necessary exactitude it is necessary to have a large reserve of converging power; otherwise the demands on the nervous system are not easily met and "eyestrain" may ensue. What appears new in Mr. STUTTERHEIM's theory is the assumption that to secure accuracy of binocular fixation at any distance, and not only for near work, a large reserve power of convergence is essential. Long ago LANDOLT in discussing insufficiency of convergence put the necessary amount of reserve power as twice the amount of what is habitually required for near work—i.e., anyone habitually working at a distance of 12 cm. needs, for comfort, to be able to converge to a point distant 4 cm. from his eyes, and it is customary to instruct patients who display such insufficiency to exercise their convergence by simple practices at home. In exceptional cases prisms may be prescribed, either base out for temporary wear in order to exercise the muscles, or base in in order to relieve them. Graduated exercises carried out in the consultation room have also been used by some surgeons and it is to this that Mr. STUTTERHEIM returns, not merely with the object of increasing the converging power for near fixation but for promoting the ease of fixation at any distance. There is one precaution which might be taken as a preliminary measure by those who propose to try this treatment. If the symptoms of eyestrain of which the patient complains are really due to this cause, he ought to be relieved by putting one eye professor of genito-urinary surgery at the George Washington University, publishes results which throw a new light on the operation. Out of 31 cases of azoöspermia following bilateral epididymitis 19, or 61·3 per cent., were cured. Twelve of the 19 patients in whose semen spermatozoa reappeared became fathers, and in one of the remaining cases impregnation occurred but was followed by a miscarriage. This is the first series of successful cases reported, and Dr. Hagner is to be congratulated on his perseverance and on the excellence of his technique, which he describes in detail. In all of the successful cases fine silver wire was employed for sutures, otherwise the operation does not differ radically from that suggested originally by Martin. The author states that the reappearance of spermatozoa in the semen is not immediate, and as long as nine months must be allowed to elapse before judgment is passed. If at the end of this period no change is noted in the semen the operation may be repeated, provided a sufficient length of vas remains to allow the surgeon to make a fresh anastomosis. It is of course essential that the patency of the vas deferens should have been previously demonstrated. Dr. Hagner's anastomosis with the epididymis is a lateral one, and he satisfies himself that active spermatozoa are present by microscopic examination of the milky fluid that exudes from the cut tubules. If no spermatozoa are found another incision is made in a different situation and the examination repeated. Dr. Hagner avoids injecting irritating fluids such as collargol into the proximal section of the vas in order to test its patency, as he thinks that this is likely to increase fibrosis at the site of operation.

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[1] Indications for the Kinetic Treatment of the Eyes, Brit. Jour. of Ophthalmology, Monograph Supplement V., 1931.

A TEST FOR ENCEPHALITIS.

A NEW biological test for encephalitis depends on the effect of the virus on the cornea, first observed by Grüter in 1912. In the last 18 months H. Knauer and P. A. Jaensch[1] have made about 100 inoculation experiments, mostly with cerebro-spinal fluid. The suspected material was inoculated on the cornea of a rabbit by scarification and the eye was examined every 24 hours by direct inspection, before and after staining with fluorescin, and by slit-lamp. Control material, including distilled water, physiological saline, serum from healthy children, and bacterial toxins had only a transitory traumatic effect, while of the 100 cerebro-spinal fluids and other pathological material examined 60 caused keratitis punctata. It proved possible to reproduce this keratitis by animal passage, which Knauer and Jaensch present as evidence of a living virus in the original material. The positive results were obtained with cerebro-spinal fluid from 26 patients. These included three cases of post-vaccinal encephalitis, one each of encephalitis in association with influenza, whooping-cough, and measles, and nine other acute cases of encephalitis, while the remaining 11 cases were chronic.

The positive results raise many points for discussion. For example, the blood-serum from the case of measles encephalitis was tested with negative results and it is hence concluded that the virus of measles is probably not the cause of the encephalitis. On the other hand, it was found that the blood-serum of a healthy child on the sixth day after vaccination—when, as Eckstein has shown, vaccine virus is present always—gave a strongly positive keratitis reaction, suggesting a close relationship between vaccine virus and encephalitis in such cases. The investigation of chronic cases of encephalitis, exhibiting for example the typical post-encephalitis syndrome, showed that a living virus capable of producing keratitis in the rabbit could be obtained as long as 12 years after the acute phase. In most of the cases of tuberculous meningitis inoculation of cerebro-spinal fluid gave negative results but in one of them keratitis developed. Histological examination of the brain showed an undoubted encephalitis besides the meningitis, while, on the other hand, an emulsion of tubercle bacilli failed to produce the usual keratitis. A case of septic meningitis also showed encephalitis and it is suggested that in such cases the encephalitis virus is present as well as the other invading organism. Certain cases of chronic hydrocephalus gave positive results and other work proceeding at Breslau is quoted to support the view that encephalitis may cause hydrocephalus.

The negative results are likewise interesting. For example, in the case of a 10-year-old girl the clinical picture was that of the acute stage of encephalitis lethargica of a month's duration. The negative effect of inoculation of cerebro-spinal fluid was a great surprise and appeared to throw doubt on the value of the method. Autopsy, however, showed a cerebellar tumour as the only intracranial lesion. Negative results were also obtained in cases of chorea and one case each of disseminated sclerosis and acute poliomyelitis. The strength of the positive reactions could be measured by classifying the keratitis according to the time when it was first observed and the time it took to heal. In one case Knauer and Jaensch succeeded in demonstrating a gradual diminution of the corneal reaction with cerebro-spinal fluid from a patient with post-vaccinal encephalitis treated with parental serum. Both as a diagnostic test and as a method of investigation this new procedure may well prove instructive. The fact that similar results were obtained with fluid from at least three types of encephalitis—lethargica, post-vaccinal, and post-infectiosa—by no means invalidates the test and may itself be significant.

TREATMENT OF ADDISON'S DISEASE.

A REVIEW[1] of the current treatment of Addison's disease indicates that progress is being made in substitution therapy. The authors think that three forms of treatment are of value: (1) the Muirhead treatment, which consists in giving as much adrenalin as can be tolerated (by rectum, by mouth, and subcutaneously); (2) the injection of intravenous glucose and sodium chloride intravenously in the crises of the disease; and (3) the administration of suprarenal extracts. The first two of these methods, although they may produce temporary improvement cannot, of course, cure the disease, but Swingle and Pfiffner have prepared an aqueous extract of suprarenal cortex which is capable of reviving animals on the verge of death from suprarenal insufficiency and of restoring them to an apparently normal state of health which could be maintained by daily injections. When the use of this extract was combined with the other two methods of treatment the clinical results were sufficiently striking to suggest that it contains the missing cortical hormone in an active state. In treating the seven severe cases reported the supply of extract was still very meagre and intermittent; its administration could not be consistent or long continued, and it was used chiefly during the crises or when the other two methods had failed. In the most severe cases it abolished nausea and vomiting within 36 hours; the appetite returned to the point of hunger, and there was a remarkable increase of strength, with a rapid gain in weight. But the peak of improvement was usually reached in about a week and was followed by a general decline with a reappearance of active symptoms in from 10 to 14 days. The authors of the report are inclined to believe that the cortical hormone is as effective in controlling the crises of Addison's disease as insulin is in controlling diabetic coma, although it acts more slowly. They admit, however, that allowance must be made for the underlying cause of the disorder, and that confirmation of the results will be necessary. Messrs. Allen and Hanburys inform us that they have a limited supply of the extract and will supply particulars on application.

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[1] Jahrb. f. Kinderh., Feb., 1931, p. 265.

[1] Rowntree, L. G., Greene, C. G., Swingle, W. W., and Pfiffner, J. J.: Jour. Amer. Med. Assoc., Jan. 24th, p. 231.

PRESERVATION OF SPECIMENS.

A NEW method of preparing anatomical and other specimens is now being brought forward, originating, we believe, in Germany. It consists in sterilisation followed by replacement of the water by hard paraffin in such a way that form and dimensions are retained. The result resembles a wax model, but it is firm and dry to the touch, and can be handled without damage. It is stated that all requirements are already fulfilled so far as anatomical, zoological, and botanical specimens are concerned, and the inventors hope they will soon be able to meet the "somewhat more exacting needs of pathologists in regard to colour and consistency." Sections may at any time be taken for microscopical examination, and are said to be perfectly satisfactory because the original tissues are well preserved. We have been much impressed by the specimens we have seen, and if the claims made for the method are substantiated, it will be of considerable value for museums and for the direct instruction of students. Under the supervision of Mr. A. L. Burlin, Ph.D., laboratories have been established at 297, Seven Sisters-road, London, where specimens can be sent for treatment by this "Eternitas" process. Medical men may, if they wish, carry out dissections at the laboratories at a proper stage in the course of preservation, and a stock of specimens is being prepared for sale to teachers and students.

HEREDITY IN DIABETES MELLITUS.

AN interesting contribution to our knowledge of the heredity of diabetes mellitus has been made by Dr. S. Kennedy[1] in his study of ten cases occurring in two generations of a family. The first generation consisted of 28 persons, the children of one brother and two sisters; of the 25 who could be traced, eight developed the disease and 17 did not. In this generation there were five amputations for diabetic gangrene. In the second generation 35 persons were studied and diabetes was discovered in two. In none of the ten cases did the disease run a rapid course, and all the diabetic patients were overweight. Clinical evidence suggests that the mother of the original three children died of diabetes, although the diagnosis was not made. Dr. Kennedy quotes other examples of families with hereditary diabetes, among the most remarkable being that observed by Joslin, in which 12 brothers and sisters had diabetes and all but one died of the disease. Dextrose tolerance tests carried out on apparently healthy members of diabetic families show that an impaired sugar tolerance is by no means uncommon. In one series this was found in 21 out of 40 patients. The evidence so far is too incomplete to show by what laws the tendency is inherited. Cammidge believes that in some human beings the tendency is transmitted as a dominant characteristic when the disease is likely to be mild and to appear later in each generation; and in others as a recessive characteristic, when the symptoms are more likely to be severe and to appear earlier. More data will be needed before this theory can be tested. It has been difficult to obtain hitherto, because a complete account of a family in all its branches is seldom available for more than three generations, and modern methods of diagnosis essential for strict differentiation were not available for the earlier cases.

MEDICAL TREATMENT OF CONGENITAL PYLORIC STENOSIS.

A FEW months ago we reviewed a paper in which Siegfried Wolff, of Eisenach, described some excellent results with Ibrahim's method of treating congenital pyloric stenosis without operation.[1] Wolff has now brought his total of cases up to 102 and publishes further details of his method.[2] The main stress is laid upon diet. He uses a maltose-protein milk which is concentrated to supply three times as many calories as a corresponding bulk of human milk. For this food he claims the three advantages that it has a high nutritional value in small bulk, abolishes all danger of dyspepsia, and in its concentrated state passes relatively easily through the pylorus. A quantitative scheme of feeding has to be worked out for each case, beginning with small frequent feeds—for example, 1 oz. 12 times in the 24 hours—and very gradually increasing their quantity and decreasing their frequency, always being guided by the abolition of the vomiting. This "methodical masking" of the symptoms, as Ibrahim has called it, is the basis of the whole scheme, and great care is needed in watching the child through a period of weeks with immediate return to smaller and more frequent feeds if vomiting should recur. Other food mixtures can be used, but the doctor must carry on with a single type of food in each case and not change about, so it is better for him to get to know one variety of milk-mixture thoroughly rather than experiment with several. Human milk Wolff rejects on several grounds; it is inadvisable to let babies with pyloric stenosis suck at the breast, he says, for this excites pylorospasm, and there are great practical difficulties of maintaining an adequate supply of breast-milk without the suction of the baby. Next in importance to diet comes the supply of fluid, and this is maintained by giving once or twice a day 100 to 200 c.cm. of physiological saline or 5 per cent. glucose solution by means of a 20 c.cm. record syringe, the solutions being kept in sterile ampoules so that the method is applicable to out-patients or private practice. The frequency of this supply of fluid is gradually decreased and it is discontinued as the child retains more by the mouth. Frequent stomach wash-outs are important, ordinary water being used; the number employed is determined by the number of daily vomits and the state of the gastric contents obtained. Between feeds the baby must be kept as quiet as possible, since every disturbance is liable to cause vomiting, and warm applications to the upper abdomen are said to have a soothing effect. Atropine valerianate solution (1 in 1000) is given in minim doses before each feed, the amount being increased cautiously to two or even more minims. In hospital this can be given subcutaneously, but the drug is equally effective by the mouth.

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[1] Jour. Amer. Med. Assoc., 1931, xcvi., 241.

[1] THE LANCET, 1930, ii., 702.

[2] Med. Welt, Jan. 10th, p. 25.

It is often argued that operative treatment is relatively economical, cutting short the duration of the illness, and saving weeks of anxiety and troublesome supervision. But, says Dr. Wolff, economy should never be urged as an indication for an unnecessary and dangerous operation, and even if surgical statistics could show results as good as his treatment—namely, a mortality of less than 2 per cent.—he would still consider "conservative" methods preferable. Now that exact details are available these methods should have adequate trial in this country where, by all accounts, congenital pyloric stenosis is more frequent than anywhere else. The continental nomenclature which classes all such cases as "pylorospasmus" must be understood to mean true hypertrophic stenosis in the majority of cases.

THE OBLIGATION TO NOTIFY.

THE hearing of a case last week at the North London Police-court should bring home to practitioners their responsibility in the eye of the law for the notification of infectious disease. A summons had been issued by the Islington Borough Council against A. C., an Italian restaurant keeper, and Dr. X., practising in Upper Holloway. The Italian was summoned as the head of the family on the following charge: being aware that his boy, aged 8, was suffering from an infectious disease—namely, diphtheria—he failed to send notice to the medical officer of health under the provisions of the Public Health (London) Act, 1891. Dr. X. was summoned as a medical practitioner attending a patient suffering from infectious disease, for failing to send forthwith to the medical officer of health the certificate required under Section 55 (1b) of the same Act. The circumstances were set out by the solicitor for the Islington council. The doctor being called to see the child took a swab of the throat and sent it to the medical officer of health. On receiving the report he saw A. C. at his home and told him that the child was suffering from diphtheria, giving him a certificate addressed to the medical officer of health which he told him to take to the town hall. Four days later Dr. X., seeing the child in the street, wrote himself to the medical officer of health enclosing a further certificate. As a result of this letter an inspector called at A. C.'s house, and finding no one at home he went to the restaurant where he saw the child playing with other children. A. C. admitted having received a certificate from Dr. X. and having failed to forward it as he had been told to do. He had, it seems, sent for Dr. Y., an Italian, who told him that the child was suffering from tonsillitis; being thus reassured he did not send the certificate. The inspector obtained an admission from A. C. that he did not tell Dr. Y. that he had previously called in another doctor who had taken a swab and issued a certificate. The Islington public health committee, said the solicitor, felt it was not their function to apportion blame; it was, however, the duty of a medical practitioner to notify a case of infectious disease to the medical officer of health and to see that he was in fact so notified. A sanitary inspector who gave evidence admitted that certificates were sometimes sent to the health department by the parents, and that this procedure had the advantage of getting the department in personal contact with the parents, thus preventing hours of delay. A. C. pleaded guilty to the charge and was fined 40s. and costs, the magistrate registering surprise that this was the maximum penalty he could inflict. Dr. X. pleaded not guilty on the ground that the words in the Act were: "send the certificate to the medical officer of health." No method of sending the certificate was laid down and he submitted it was sufficient to send it by the parent. The magistrate ruled that there was not a sufficient sending of the notice within the terms of Section 5 of the Act; he dismissed the practitioner from the case under the Probation of Offenders Act, remarking that the case had been properly and fairly opened and public attention called to the matter. Practitioners will no doubt do well to bear this ruling in mind.

THE CINEMA INSTRUCTOR.

AN exhibition of a talking film made from the performance of a low Cæsarean section by Dr. DeLee, of Chicago, invites renewed attention to the possibilitie of the cinema as an important factor in medica education. A number of medical men who have seen this film have come away impressed by possibl teaching developments which this exhibition suggested There have been, of course, several surgical cinematographs before, and we all remember vividly the splendid representations of Harvey's experiments demonstrating the circulation of the blood. Hitherto, all the films of scientific or medical interest that we have seen have been silent. The addition of the voice is a real gain in the educational film, whatever it may or may not be in the world of entertainment, for the personality of the teacher comes into play in a manner impossible without speech. Moreover, speech allows exact explanation of actions while those actions are taking place before the student's eyes, replacing captions, which either precede or follow in the case of silent pictures. Every student, moreover, is familiar with the difficulty in finding room for more than a few spectators in the surgical theatre. The film presents the spectacle in detail to the easy observation of any number, although what they see is not exactly what they would see if they were actually observing the living subject. Even the pitch of photographic technique reached to-day cannot give the impression of living flesh and blood, or of the different textures of the tissues manipulated.

Surgical operations are by no means the only field for cinematographic medical instruction. It is easy to imagine the scope of this method in anatomy and physiology and bacteriology, and future years will surely see its routine use in medical education, although at present it is not easy to see how this vision is to be made real. The production of films comparable to that shown by Dr. DeLee is exceedingly expensive, and anything less good is scarcely worth producing. A very wide demand must exist before such films will be forthcoming, and their cost will have to be met by some sort of coöperative organisation such as should arise when medical men recognise and insist upon receiving the advantages in post-graduate teaching.

LEASOWE HOSPITAL.—The Liverpool Open Air Hospital for Children at Leasowe is to be given the additional name of "The Margaret Beavan Hospital" in memory of the late Miss Margaret Beavan, formerly Lord Mayor of Liverpool, who was keenly interested in child welfare.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.[*]

XI.—WISH-FULFILMENT.

VIEWED from the standpoint of wish-fulfilment, the study of human behaviour is comparatively simple. Whether the motive be conscious or unconscious, purposive behaviour is directed towards the fulfilment of a wish. The wish is the dynamic basis of life and is the channel through which life's energy flows towards the ultimate goal of some kind of satisfaction. "I feel I want" is the primary motive force of life, and expresses the double aspect of the wish and the feeling which is associated with it. From this point of view we may group together instincts, needs, hungers, wishes, and the "will," as being different aspects of the same positive creative urge. Whether they be conscious or unconscious, they form the basis of all purposive behaviour.

What part then does consciousness play in wish-fulfilment? This point has already been referred to in a previous lecture, but perhaps it is as well to repeat that consciousness—thinking, reasoning—is not itself possessed of energy. Consciousness is either the *selective function*, the purpose of which is to choose those wishes which are most important and decide how they shall be achieved, or it is itself a form of *purposive behaviour*, in which case it is motivated from a deeper source. Consciousness is not the source of the will, but an aspect or expression of it. It is not creative in itself apart from those deeper motives which activate it, but it is comparative through its use of material derived from memories of past experiences and its further imagination of what might be, but has not actually been, experienced.

It may be said that the conscious mind is the means by which we measure our motives. Let us examine this statement from the point of view of philology. We find that the Latin word for "mind" is "mens" and that the same root occurs in many other words, such as "mensis"—a month, "mensura"—*a measure*, and "mentir"—to lie, or measure falsely. Reason, rational and ratio, come from "reor"—to think, and its past participle derivative, "ratio"—*a calculation*. *In each of these words there is the* same idea of a static *measure*. If we turn to the corresponding root from which the word "emotion" is derived, we find the Latin words "moveo"—I move, "mos"—the will or custom, "mox"—soon, and the derived English words, "motive," "mode," "mood," *all of which indicate the dynamic idea of moving.* Conscious reason is the means by which we *measure*, but it is the will and the wish that makes us *move*. So we may say that "measures" are the children of "movements," and words of feelings.

PLEASURE AND HAPPINESS.

What are the true meanings of these words which mean so much to all of us? They can only be understood in terms of wishes satisfied. *To satisfy a wish is to feel pleased* and the state of pleasure lasts during the process of satisfaction. Whatever the wish or need may be, its satisfaction is the source of pleasure, whether it be the fulfilment of an excretory function, or the satisfaction of hunger by food, the intense emotional demands of the sexual urge, or the more complicated satisfaction of sublimated achievement. But the trouble about all pleasure is that it is transient and may find itself in conflict with other wishes that are frustrated by its own fulfilment. This is particularly liable to be true with regard to sexual wishes, which are so prone to conflict with the wishes of conscience (I want to be good) and the fear of punishment (I want to be safe).

Is it not possible for us so to organise the many willing horses of our dynamic team that they may all pull in the same direction towards the same goal? For only thus can we hope to achieve happiness. Firstly, this necessitates a goal upon which all members of the same team may be agreed, and it must therefore be a distant one. It also presupposes the necessity for organisation, comparison, selection, inhibition, and control, which is the function of a coördinated consciousness. We may state, therefore, that these are the theoretical requirements for happiness—viz. :—

1. Wish-fulfilment—for all the members of the dynamic and impulsive team.
2. Direction towards a single distant goal (*the unifying ideal*).
3. The coördinative control of consciousness.

Classification of Motives.

If motives are so important, being the driving power of our behaviour, it is worth while to try to classify them, in order to understand them better. This is a difficult matter, but if we divide our motives into conscious and unconscious, these may again be subdivided as follows :—

(1) CONSCIOUS MOTIVES.

(*a*) *Positive :* "I want to."

(*b*) *Negative :* "I want not to" (*not* "I do not want to").

It is important to realise that when a person says he does not want to do a thing he is still expressing a positive wish. It is more accurately expressed by *saying* "*I want not to do a thing.*" *He is not denying* the wish, but expressing a wish not to, which is not quite the same thing. For example, if a patient says "I do not want to live," he is not necessarily denying that he wants to live, but he is making a positive statement of a wish not to live, and we must not be surprised, therefore, if this wish achieves fulfilment in such positively motivated behaviour as suicide.

There is a further important distinction which may be made between conscious wishes—namely, those which are :—

(*c*) *Direct*—being wished for as an end in themselves.

(*d*) *Indirect or deferred*—being wished for not as an end in themselves, but as a means to an end. To work for medical examinations during all the years of training when much unwished-for drudgery is gone through in the pursuit of the distant goal of the comparative freedom of ultimate qualification, is an example of an indirect or deferred wish. Such wishes are of a higher order than the direct ones, in that they often involve the *inhibition* of more immediate contending wishes. Deferred wishes are often thought of as if they were in fact external compulsions, but nevertheless it is true that they are internal wishes. For example, work may be unpleasant in itself and we may say "I must work to live," as if someone were forcing us to work. But if we want to live and work is necessary to live, we want to work also as a means to the end of living. Similarly, to take unpleasant medicine is not so much an act under compulsion as a wish to take something which, although in itself unpleasant, is a means towards the desired end. This distinction is in practice an important one, because it is very much easier to do unpleasant tasks if we feel we want to do them, rather than to make the mistake of feeling that we are compelled to do them, which may arouse in us rebellious feelings of refusal.

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[*] A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Earlier lectures of the series have appeared weekly in THE LANCET since Jan. 3rd.

(2) UNCONSCIOUS MOTIVES.

(*a*) *Needed.*—This is a very important group into which may be put those defence mechanisms or automatic stabilisers which have been discussed in previous lectures. The feelings of fear, guilt, and inferiority *need protection*, which is automatically provided by means of the defence mechanisms of over-compensation, identification, projection, &c.

(*b*) *Desired.*—This group of unconscious motives includes those primitive, infantile, crude, and often symbolised wishes, which occur most frequently in mental disorders where normal growth and development has failed to take place—e.g., the various modifications of the Œdipus motive or the death wish, &c.

Conflicting Wishes.

When we drive a car we are not satisfied unless the various cylinders are working in time and harmony as to their function. If, out of the six, one is out of harmony so that it is working against another, the result on the functioning of the engine is to cause it to lose a large part of its dynamic efficiency. The same is true of human motive and behaviour, and yet it is to be feared that for most of us our motives are, to some extent at least, working in conflict rather than in harmony, to the detriment of our efficiency. The only way in which the inevitable multiplicity of motive can be unified, is by the exercise of the selective function of consciousness which must determine, like the magneto of an engine, which motive is going to operate "now." Otherwise, we are likely to sacrifice the happiness of to-morrow for the pleasure of to-day and the "birthright" for the "mess of potage."

There are two different ways of resolving conflicting wishes. The first is by *conscious suppression* with a possible need for ultimate sublimation, and the second is by *unconscious repression*, which involves the loss of control of the fundamental motive which still remains active and may be the source of the development later of purposive symptoms through a side channel of substitutive symbolism.

It would seem simple enough to understand what is meant by the words "selfishness" and "unselfishness," until we start to examine them psychologically, when we find that these words are in fact very confusing. If all our behaviour is motivated by a wish, whether it be a wish to avoid punishment, to be praised, to please someone, or to be good, it is obvious that from one point of view all such behaviour may be called "selfish," and no behaviour is worthy of being called "unselfish." Yet the everyday meanings of the words remain, and unselfish conduct is just as much desirable, even if psychologists say that there is no such thing. But we need only presuppose the existence of the *herd instinct*, with its desire towards social coöperation and adaptation, to realise that there is a group of wishes, the satisfaction of which depend upon "unselfish" behaviour, in which personal satisfaction is derived from some benefit obtained by another, even if it is at the expense of our own effort and loss. Our faith in human nature depends primarily upon our belief in the existence of this herd instinct, which is most deeply satisfied by behaviour which is directed towards the welfare of others, rather than the self. The development of this *coöperative tendency* would seem to be a sign of psychological growth and emotional maturity. Such behaviour is the source of the deepest personal satisfaction and yet it is "unselfish."

Our attitude towards the problems of psychology will therefore be found to depend to a great extent on our belief in a fundamental wish to coöperate with other members of the social group. The psychology of Adler is largely based upon this principle and he ascribes all neurosis to a failure of adaptation in this regard. It is the basis of our unselfish and altruistic behaviour, and yet it is itself to be regarded as a fundamental activity of wish-fulfilment—the wish to coöperate, the wish to be accepted by and of service to the other members of the herd. The encouragement of this wish must therefore be the basis of our therapeutic endeavours, because it is through its activity that interest in others outside ourselves, "object love" and unification of all our conflicting wishes towards a single purpose and a single goal, needs to be directed. Even such altruistic endeavours as are represented by the words "sacrifice," "service," or "surrender," are activities motivated by the herd instinct, the wish to coöperate. Social service, social coöperation, and sacrifice, unless *willing*, are of little use either to the community or to the individual.

The difference, then, between "selfishness" and "unselfishness" would seem to be that the wish in the former is self-centred and emotionally immature, whereas in the latter it is not self-centred but object-centred, herd-centred, or cosmo-centred, and is emotionally mature. But both are motivated from the same primary source, "I want."

Conscience.

Having considered the inevitability of emotional conflicts and the difference between selfish and unselfish behaviour, we must now try to understand something of the source and function of conscience. It may perhaps seem a startling statement to make, but *conscience is a form of purposive behaviour and is motivated by wishes*. In other words, conscience represents something that we want or, more unconsciously, need. The function of conscience is to deal with those intolerable and unsuitable wishes which, if exercised, would get us into trouble. It is largely acquired through suggestibility from the authorities of our earliest environment, and is formed by the substitution of an *internal inhibition* to take the place of their *external prohibition*. Our attitude may be one of identification with authority which is mainly a defensive one, or it may be one of resistance, which is inclined to be offensive. Conscience, the measure by which we rule our lives, is in the first place derived from *fear*, and only later is it capable of development into the higher and more mature character of *love*. But in either case it is a measure of wish-fulfilment and according to whether our primary attitude is one of identification or rebellion, we shall either wish to do, or wish not to do, that which we measure to be our duty.

Conscience is sometimes spoken of as the "still small voice," but it comes to many of us in a way that is neither still nor small. It is liable to make cowards of us all and invalids of many. Many factors go to make it up, and it is necessary to analyse it before we can say which are good and which are bad. If we take it to pieces analytically we may trace its development from several quite different sources.

(*a*) *Imago affects: superstition.*—The first source of conscience is derived from *father imago* and it is for this reason composed largely of defensive reactions to fear and guilt. The feeling "I ought not" is both deep and primitive, and only later becomes rationalised in consciousness. It has already been mentioned how the defensive mechanisms for imago fear and guilt tend to be of the propitiatory and sacrificial kind. The general idea is that wish-fulfilment, interest, and pleasure, being associated with guilt, are to be regarded as *wrong*, and that the pursuit of the duty imposed by an external authority, preferably with a certain amount of personal discomfort, is *right*. Such ideas, however, tend to be extremely crude and undifferentiated, and seldom conform to a reasonable and balanced judgment as to right and wrong. They may be grouped under a general heading of superstitions.

(*b*) *Vanity.*—It may perhaps seem strange to associate conscience with vanity, but in many cases it would appear to be correct to do so. It is common with many of our patients to hear them say that they are the guiltiest people in the world or that they have committed the unpardonable sin. Their guilt being measured in superlatives, is merely an inverse statement of the superlative nature of their self-regard. This arises out of the fact that we are liable to identify ourselves with father imago, so that the external authoritative standard also becomes the internal standard of what we feel we ought to be. We feel we ought to be like father, and father being invested with the omnipotence of imago, we feel that we also ought to be omnipotent. The frequent reference to "miserable sinners" in the Prayer Book would seem to be derived from this same unconscious source and may also be regarded as of the same type of inverted vanity. It may perhaps also be suggested that identification with the Christ figure, so-called Messianic over-compensation, is another form of vanity. It must not be forgotten that there is all the difference between striving after a high ideal and the phantasy of assuming by identification that one has attained it. This kind of conscience is always obsessed with the idea of its own self-importance.

(*c*) *Convention: suggestibility.*—Another source from which our conscience is derived is to be found in the domestic and social conventions of our early environment. To this extent, conscience is a relative matter and different standards of moral conduct appertain to different historical periods, countries, and families. The stern and patriarchal parent of the Calvinistic type is very liable to impose a standard of conscience, which can only be lived up to with the aid of the development of neurosis.

These sources of conscience compose the "super-ego" described by Freud. The super-ego is a very stern master and frequently weighs like a millstone round the neck of the already over-burdened neurotic. It is probably true to say that the fundamental difficulty of neurosis is not so much due to the nature of the *wishes*, as to the weight and character of those *inhibitions* which comprise super-ego or conscience. The feeling state in neurosis is inevitably largely one of fear and guilt, and consequently freedom for individual wish-fulfilment and development is very seriously hampered.

There are two other sources of conscience, however, which are free from this compulsion of fear.

(*d*) *Learning by experience* is the desirable way in which the primitive "super-ego" type of conscience needs to be modified. As we grow older, we should learn that much which was previously accepted without question as an external prohibition requires modification. We start to think for ourselves and so develop our own standards of moral conduct. They may be very different from those imposed upon us by our parents and unconscious imago feelings, and yet leave us possessed of a conscience still, but one which is much less rigid, formidable, and fearful. Learning by experience leads to the development of wisdom and common-sense, which can never be achieved merely by an uncritical acceptance of dictatorial statements by external authorities.

(*e*) *The still small voice.*—Finally, there is that last and most important component of conscience, which may perhaps be truly called the "still small voice." What is it and from whence does it come? It is our belief in the existence of this factor which, as has already been mentioned, will largely determine our faith in, and attitude towards the problems of, human nature. If there is any instinct of coöperation, or innate will to love one's neighbour, or fundamental tendency towards love and growth, this must always be the basic factor in the development of those moral standards which determine our higher conscience. The feeling state associated with this "still small voice" is not that of fear, which speaks to us in tones of broadcast thunder, but of love. If we believe in the tendency towards object-love, coöperative and altruistic, as being the fundamental inborn characteristic of human nature, it is this factor in conscience which is of utmost importance and deserves our greatest respect. But its existence is dependent upon growth, and growth cannot take place where there is fear or the crude type of undifferentiated affects associated with imago.

There are thus two types of conscience mutually exclusive: one, although rationalised, is primitive, unconscious, compulsive, loud-voiced and motivated by fear; the other, mature, conscious, quiet, free and motivated by love. It is quite obvious with which we may expect to have to deal in neurosis. Superstition, vanity, and suggestibility, however subtly they may be rationalised into more favourable disguises, such as "conscience" and "ideals," must be regarded as the chief enemies of our therapeutic endeavours.

With regard to this problem of conscience, it is interesting to contrast the attitudes of the *melancholic and the criminal.* Whereas the former may be quite sure that he has committed the unpardonable sin, the latter is equally certain that he has not. The conscience of the one is as accusing as the other is unwilling to accuse. It may be stated that the main factor in criminal psychology is that *the criminal must be able to believe in his own innocence.* This infallible capacity for ego-phantasy, rationalisation, and projection, may be regarded as the hall-mark of a fundamentally criminal type of mind, and is in complete contrast to that of the melancholic.

Irritability, Temper, Depression.

These three are all associated with frustrated wish-fulfilment. Irritability and temper are degrees of reaction towards our inability to have things as we would wish them to be. When things go wrong with us, we may react positively in terms of irritability and temper, or negatively in terms of sulking and depression. The latter are moods resultant upon disappointment. We feel depressed because we cannot have what we want. It is interesting therefore to suggest that the depression of melancholia, from one point of view at any rate, may also be associated with the frustration of desire, its uncontrollability being due to the unconscious nature of the wish that is being denied. This would seem to be confirmed by the exaggerated nature and inexorability of the conscience in melancholia, the function of which is inhibitory towards the impulses of desire. An extreme sense of duty is liable to be a very depressing thing, and unless it is *willing* it is a frequent source of unhappiness and disappointment.

Hysteria and Conversion Symptoms.

Hysteria is not only found in women, nor is it only to be diagnosed in the presence of irrational laughter and tears. It is one of the most protean and varied of mental disorders, but the psychology of hysteria will always be found to include the conflict of opposing wishes, "I want to—I want not to," and is usually associated with sexual desires striving for satisfaction against the opposing inhibitions of a conscience which is dominated by fear. Whichever side of the conflict may win (it is usually "conscience"), the other is inevitably disappointed, and there is no chance of happiness for the hysteric. What commonly occurs is emotional irritability and irrational overflow in temper, tears or laughter, with perhaps unconscious compromise by the development of some symptom, be it phobia, tic, opinion or illness, which by substitution or symbolism is able to gratify that repressed desire which conscience will not tolerate. The solution of the conflict is thus found by unconscious compromise, and the patient, being quite unaware of the underlying motives, may apply to the doctor to be cured of the very symptom which is the means of gratifying the consciously intolerable wish.

Where substitution of a physical symptom for the emotional problem has taken place we speak of "conversion hysteria," and in this disorder we seem to be dealing with a peculiar liability to transfer emotional problems on to physical symptoms. It is as if emotional energy, which might have come out at higher levels of behaviour, or have been expressed in dreams or felt as emotional conflict, has been resolved by the development of physical symptoms through neural paths of transmission.

It is interesting to ask the question: "What would have happened to Cinderella if her fairy-godmother had not provided the means for her to fulfil her wishes?" In the world of everyday life, apart from phantasy, fairy godmothers are not frequent, because we cannot all be winners of sweepstakes. There are many Cinderellas of both sexes who solve their problems through the mechanism of conversion hysteria, developing the disabilities of abdominal pains, contractures, "neuritis," and other physical disorders as a justification and a compensation for the frustration of their wishes.

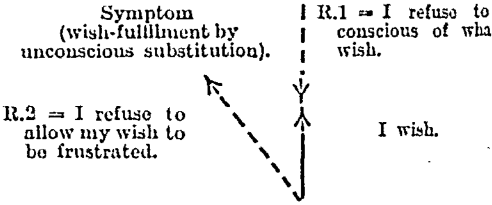
Not all of us have this peculiar capacity for physiological interpretation of psychological stress such as occurs in the cruder forms of conversion hysteria, but in less obvious degrees the same mechanism is probably responsible, nevertheless, for a large part of the minor disorders of general practice. Social conditions and economic hardships make life difficult for the masses and wish-fulfilment hard to achieve. and we may anticipate that the result is a large increase in liability to disease. In view of the amount of money which is spent every year on sickness benefits, added to what is lost from production owing to absence due to ill-health, it would seem as if economics as well as medicine has much to learn from the development of a psychological attitude towards the problems of social and individual unhappiness.

Resistance.

The understanding of resistance is very important in psychotherapy, because it needs to be overcome before we can obtain the desired readjustment towards the realities of life in our patients. Resistance is partly a consequence of "super-ego" or the conscience of fear, and is an unconscious or mechanical defence against wishes which are felt to be wrong and which are therefore not consciously tolerated. Repression, or automatic obliteration from consciousness, is a consequence of this resistance. "I (the measure) must not know what I want (the motive)," and the motive therefore does not enter consciousness, although, being dynamic and out of control, it is liable to achieve fulfilment in one way or another, frequently by the development of symptoms.

We may therefore divide resistance into two kinds:—

(1) Resistance against recognition of a motive.
(2) Resistance against frustration of a motive.


Symptom (wish-fulfilment by unconscious substitution).
R.1 = I refuse to be conscious of what I wish.
R.2 = I refuse to allow my wish to be frustrated.
I wish.

The above diagram will make this more clear. "R.1" is the repressing force in consciousness which refuses to recognise the intolerable motive, because of the existence of conscience or "super-ego." This is the first resistance which we meet with in our patients. They are unwilling and unable consciously to recognise and admit the true nature of their underlying motives. It is, however, only the first and easiest part of the resistance which has to be overcome before the patient can be put on the right road to an acceptance of reality.

The second resistance, "R.2" on the diagram, is that which the patient puts up in order to maintain the fulfilment of the wish which has been gratified in some kind of symptom, *even though it is for that same symptom that he is asking for a cure.* This is what we mean when we say that the patient does not wish to be cured—*he does not wish to have the gratification of his unknown wish frustrated.* However, before he is well the wish must first be recognised (against the opposition of R.1), and then either sublimated, modified, or eliminated (against the opposition of R.2), and this must be achieved at the instigation of the patient's, and not the doctor's, wishes.

The therapeutic method is carried out mainly through *free association* and *transference.* The free association method has already been described as a retracing of transferred affects back to primary causes. It is an attempt to *de-condition* what have become conditioned reflexes. The phenomena of transference can only be understood in terms of imago affects, the doctor or analyst being reacted to *as if he were imago,* and having attached to him the imago affects which are present in the patient. The analyst becomes the objective focus of the patient's conflict, which is worked out with regard to him, but largely independent of his own real personality.

A good example of the compromise which may take place between the conflicting forces of wish-fulfilment and super-ego was given by a patient who required to rationalise for himself his addiction to masturbation. He was a medical student, and stated that he had had the idea of making a culture from his semen in order to cure the venereal disease which he anticipated as a punishment for his sin. By this ingenious method he was able to satisfy both his wish and his fear of consequences.

FRUSTRATED WISH-FULFILMENT.—CYNICISM.

A study of the psychology of the cynic throws an interesting light upon the way in which unconscious mechanisms may motivate behaviour. The cynic is an example of frustrated wish-fulfilment. He is primarily egocentric, wanting to get more out of life than he is willing to put into it. His disappointment at failing to get out of reality the satisfaction of those wishes which he has desired in phantasy has led to the development of a projection mechanism in defence of his ego phantasy, and he then says, "*It* is all wrong. No one can ever do *it* any good." A cynic is a repressed sentimentalist, who feels that "it" ought to be just as he would like it to be, and that it certainly would be if only he had his way. The last factor in cynicism is usually its saving grace—a sense of humour, the protective purpose of which is to make fun out of fear and disappointment.

PHANTASY.—LYING AND STEALING.

Where reality fails to satisfy wish-fulfilment, phantasy offers a ready means of gratifying it without effort, as long as reality can be excluded with safety. Lying and stealing are both examples of wish-fulfilment dissociated from reality. The motive of lying is wish-fulfilment, substituting the desired phantasy for the reality which is not desired. Whereas lying gives false measure with words, stealing takes it by deeds, and the phantasy motive is the same in either case. *The development of a sense of objective reality and acceptance of its limitations is a necessity for psychological growth.* To the child, there is at first very little difference between phantasy and reality, and wish-fulfilment may be achieved with as much satisfaction in imagination as in fact, because the two have not as yet been clearly distinguished. For this reason it is only by development through experience of reality that the child is eventually able to distinguish between what is true and what is not true, between what is "mine" and what is "not mine." Failure to accept the inevitable limitations of reality leads to a flight into the easier realms of phantasy, with all its consequent mental disorders, lying, stealing, and other forms of anti-social behaviour.

Alcoholism.

It is also interesting to consider alcoholism in relation to wish-fulfilment. The most usual treatment for this disorder is by segregation and prohibition, but such simple methods do not take into account the factor of wish-fulfilment. If a patient addicted to alcoholism is put away in an institution for three months, where he is free from temptation because he cannot obtain what he desires, there is not necessarily any change in the patient himself and his wishes, when he is again liberated in the neighbourhood of a public-house. It is easy enough to prevent anyone from having access to alcohol, but it is a much more difficult matter to prevent him from wanting it. Hence the number of relapses which occur when the addict is again faced with the opportunity for indulgence. We need to understand the *motives* for alcoholism, and primarily we must realise the simple fact that *the motive is not to be found in the flavour.* Alcohol is a means to an end and not an end in itself. Let us try to analyse the motives which are gratified in this form of wish-fulfilment.

Thirst.—It may seem unnecessary to put this simple factor first, but it is important because thirst is a very variable quantity. Some individuals have an unusual capacity for imbibing fluids and feel the need for fluid intake more than others. One patient, for instance, would never in the ordinary course of events drink less than two quarts a day, whether it were milk, water, tea, or any other fluid. It was only after he had consumed that amount that he began "drinking," when he would quite easily double it. Such a person must be considered more prone to alcoholism than one whose normal fluid consumption is only half the quantity.

Removal of inhibition is probably the most important single factor in alcoholism and is very closely associated with the problem of conscience. Conscience being inhibitive and selective, it may be regarded as a crust of ice, protectively developed over deeper motives, which requires thawing before those deeper motives can be expressed and gratified. Alcohol is a great stimulant to sociability and conviviality, removing the crust of inhibition and setting free the deeper warmth which lies below. From what we know of homosexuality, it is easy to realise that it is very frequently a repressed source of wish-fulfilment, and it is interesting for this reason to connect social drinking with the removal of homosexual inhibitions. It is probable, therefore, that some measure of repressed homosexuality is a frequent cause for alcoholism of the social kind.

Removal of prohibition.—The "rebellion" motive must not be lost sight of because it is very common, and therefore any degree of prohibition is liable to induce the opposite reaction. To be told "you must not drink" will always in many people arouse a wish to drink, even if it were not strongly present before. Rebellion being a valuable part of the biological tendency towards growth and independence, prohibition is liable to defeat its own ends *unless it prevents growth altogether.*

Euphoria.—Life being what it is, it is not easy always to feel "good," but alcohol offers us a chance of feeling better. It will, therefore, appeal to anyone who for any reason, whether endogenous or exogenous, is not feeling "good." Where normal wishes are not being given opportunity for wish-fulfilment, alcohol will afford the relief of fairy tales and phantasy.

Cyclothymia and early manic-depressive phases.—A tendency towards alcoholism may be the first evidence either of the depressed or the exalted phase, being resorted to in the first case as an attempt to overcome the intolerable burden of unreasoned depression, in the second under the influence of the pathological euphoria of exaltation.

Filling the gap.—Alcohol is a great "filler of gaps" where other defence mechanisms are weak. It fills the gap between fear and the phantasy of courage, between inferiority and the phantasy of success, between guilt and the fear of punishment. The spoilt child will therefore be a happy hunting-ground for alcoholism, finding in it the euphoria and success which neither life nor defence mechanisms are able to discover.

Oral erotism is a source of wish-fulfilment in some individuals more than it is in others, and in such cases there is a primacy of desire associated with gratification of the sensual pleasures of the mouth. Some people are always wanting to put things into their mouths, and to them alcohol is a convenient form of sensual gratification.

Conventionality and suggestibility are also factors in alcoholism, because some people are more inclined to be influenced by their environment than are others. It is interesting to note that alcoholism is to some simple minds a sign of manhood, rather than of the psychological childishness which is, in fact, the true underlying condition.

Habit.—When alcoholism has become a habit, like all oft-repeated patterns of behaviour, it is hard to break and tends to repeat itself as the way of least resistance.

Finally, there are *physiological factors.* The development of antibodies in the tissues and in the blood stream demand a supply of fresh alcohol to eliminate them. This is, of course, the familiar function of "the hair of the tail of the dog that bit you," the morning after the night before.

Externalisation.

It is a matter of common observance that, for many individuals, life seems to repeat itself according to familiar patterns. While one seems to be the favoured child of fortune, another seems to be marked out at every point for disappointment and failure. Nietzsche formulated a "Law of repeated similars" to account for this fact of compulsive repetition, but when we realise that for each of us *life is what we feel about it,* and also that our feelings are so deeply seated, so unconscious and so beyond control that it is not easy for them to change, then we see that the patterns of life's repetitions may be due to the continuity and unchangeability of our own individual feeling states, rather than to any objective reality external to ourselves. Psychologically, it is quite easy to understand that there are some people who *prefer* trouble and they are therefore more likely to be the ones who find it. But this does not mean to say that all misfortunes are due to wish-fulfilment. It does, however, suggest that they are sometimes due to more than chance.

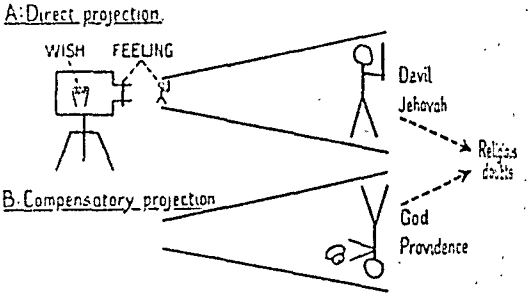
Our knowledge of life is based upon our feelings about it and our own personal experience of it. On all sides we see the same tendency towards anthropomorphism, in which our explanations of the universe find it extremely difficult to evaluate it from any other point of view than that of human primacy. This is perhaps to some extent inevitable, although it must be regarded as certainly being a limitation of the facts. But the same tendency is carried a step further by those of us who regard the universe, not merely anthropomorphically, but also as a *reflection of themselves.* It is as if, when they look at life, they are looking into a mirror and see not life but themselves. Some of us look at life as through a glass, darkly, but others, who are sure that they see more, see it more clearly only because it possesses the quality of their own reflected image.

THE SHADOW ON THE WALL.

The fact that what we see is based upon our feelings and wishes may be illustrated diagrammatically. Take, for example, the feeling about the punitive father. In Diagram II. (A) below, the light in the magic lantern represents the wish, the slide in this case the "feeling about father" (the picture of the patriarch with the punitive stick upraised), and on the screen of life, apparently objective in its reality, appears the same terrifying figure.

Diagram II. (B) represents the *compensatory method of projected wish-fulfilment,* where the punitive father has been replaced by that of a benevolent providence holding out a loaf of bread this time instead of the punitive stick. The one is merely a compensatory image, based upon the primary existence of the other. Both may appear together upon the screen of life, waging a mock war to the confusion of our faith. When we see most vividly the punitive Jehovah or the Devil, we are very liable to doubt the existence of the benign Providence of our dreams. Misfortunes occur to all of us, and it is a very simple mistake to associate them with the projected image of a punitive father imago.

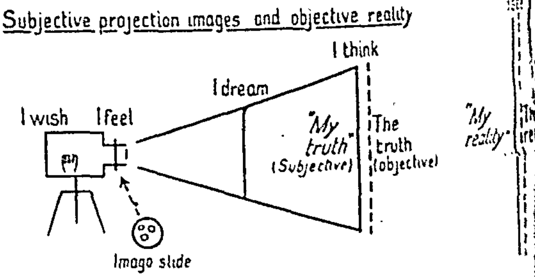
DIAGRAM II.



The above simple scheme of image projection can be made even more helpful and suggestive by reference to Diagram III.

Again, we have the magic lantern projecting its images, but this time upon three screens, two of which are internal to ourselves, and the third is supposedly "reality." The first screen is that of the *dream life,* upon which we see a crude undifferentiated picture image. The second is the screen of *rational consciousness,* in which the image has become changed into a more abstract form of symbolism, which nevertheless is motivated from the same source. On this screen we say: "I think it, therefore it is true" (and it is true enough for me, but that is not to say that it is really true). There are at least three kinds of truth: my truth, your truth, and the truth. The first two correspond with the projected images on my screen and your screen, but it is too much to assume that either corresponds with what is actually true in an abstract and objective reality. The same applies to the third screen of the real objective world. We do not always see what is actually there, but we see what we feel about it and what we wish to see.

DIAGRAM III.



By *re-internalising* what we see we are able to understand ourselves by reference to what we feel about life. To ask a patient what he thinks of Ramsay MacDonald, the Pope, Clara Bow, or a holiday by the seaside, is to ask him to draw a picture of *himself,* interpreted through what he feels about some aspect of life. So we may learn what he is like; and if he wills, he may both learn and simplify much that was previously complex and conflicting in his life.

Rationalisation and Incoherence.

Rationalisation is a coherent scheme, organised on the screen of consciousness, to fulfil the patient's deepest needs and wishes with regard to himself and life. Such rationalisations are liable to be maintained heatedly and defensively *because they are needed.* Hence the intensity and unchangeability of argument. The definite statement, "I am sure," is usually accompanied by a good deal of heat, which is the energy required to maintain the assumption in the face of considerable doubt. The tendency to systematise is best seen carried to its most pathological extent in the psychosis of paranoia, where the rationalised system is associated with the projection of a *feeling of persecution* on to the screen of objective reality. The stranger in the street who blows his nose is blowing his nose at "me," and the description of a murder in the paper is an accusation that "I" am guilty of the crime.

Systematisation is an unconscious tendency which is usually present, but it is lacking in those cases whom we regard as being *incoherent*. It is lacking at any rate in any form that we can understand, but we might say the same of a person who spoke to us in any foreign language with which we were not familiar. The incoherent ramblings of psychotics need to be regarded as an unfamiliar picture language, which we shall not understand until we can close our eyes to the familiar projections of our own system, and understand the unfamiliar pictures of the psychotic's world.

GOOD AND BAD ADJUSTMENT.

"What is truth?" We seem to be surrounded by llusions of our own creation and nowhere do we ind reality. What is reality? Our difficulty in defining it should help us to be sympathetic and olerant towards the illusory systems which others maintain to be their truth, and yet *realisation and acceptance of objective reality would seem to be our greatest safeguard in life.* The sufferers from mental disorders are those who have so far falsified reality in pursuit of wish-fulfilment that they have become lost in the quagmires of picture-thinking, transferred affects, and phantasy. Therefore we need, perhaps, to limit our conception of cure to the ideal of helping our patients to get back on to the hard road of *acceptance of the limitations of the facts of reality,* rather than to persuade them to accept or to achieve our own chosen goal.

In conclusion, some words of William Blake in his poem "Eternity," are apposite to the subject of wish-fulfilment:—

> "He who bends to himself a joy
> Does a winged life destroy;
> But he who kisses the joy as it flies
> Lives in Eternity's sunrise."

The two cases which follow are included in order to suggest that we need not always search deeply for unconscious motives in order to find the cause for mental disorder. Frustrated wishes on the conscious level may sometimes be enough to cause disintegration, but the symptoms which develop will be determined by individual differences of character.

CASE CC.—Female, aged 42, unmarried; mental nurse.

Complained of: Extreme depression, particularly associated with her periods. Lack of interest and concentration. Duration nine months.

History: She had always been a very conscientious worker as a nurse in a mental hospital where she had a very good character. There had been no previous history of depression, but she had been forced to leave her work because she could not carry on with it.

Nineteen years previously, after she had been engaged for a period of seven years to a man with whom she had been deeply in love, she had allowed herself to be seduced, with the result that she had a baby. Her emotional reaction towards the man was that she refused ever to see him again and she never afterwards took any interest in men, all of whom she regarded as cruel and wicked. She resumed her work as a nurse, the baby being boarded out, but she took a great interest in the child's welfare and provided the means for his support. Two months before her breakdown she had seen him off to Canada, having first given him every penny of her small savings. She said she felt that she was saying good-bye to everyone whom she cared for and who cared for her. *She stated that the whole of this story was quite unknown to anyone at the institution where she worked.*

CASE DD.—Female, aged 28, married.

Complained of: Depression, insomnia, impulsive outbursts of irrational behaviour. Ideas that people in the street were talking about her. Duration three months.

History: She had always been of a rather headstrong character and difficult to control. She had been successfully earning her own living before she married as a clerk in an insurance office. Three years previously her engagement had been broken off by the discovery that her fiancé was already engaged to someone else. Her pride was very deeply wounded and she felt that the other girls in the office were laughing at her. One of her employers, who was 30 years older than herself, had been taken into her confidence, and started to take her out to dinners and theatres and finally proposed marriage. She had no intention of accepting him but her family were very poor and her mother having been told of the opportunity, persuaded her to accept him, which she finally did. Within 24 hours she had decided to break it off again, but on returning to the office found it had been announced to the other girls, and she could not face being laughed at again for not knowing her own mind. Up to the last moment of her engagement she felt that she could not go on with it, but said that she was in a dream and she felt she could not turn back.

The man whom she married had previously lived for his whole life with his mother and sister, and he now took his young wife to live in the same household, expecting her to fit in with the old régime. This she refused to do and there were frequent domestic quarrels. After a year she had a baby upon whom she lavished intense, but not always wise, affection. A year later, after a period of severe emotional conflict, she commenced to feel that people were talking about her and nudging each other, and she began to develop insomnia until her final breakdown occurred.

THE SERVICES

ROYAL ARMY MEDICAL CORPS.

Lt. C. L. Day to be Capt.

ARMY RESERVE OF OFFICERS.

The undermentioned having attained the age limit of liability to recall, cease to belong to the Res. of Off.: Maj. D. P. Johnstone and Capt. L. Bousfield.

TERRITORIAL ARMY.

Capt. K. B. Dickson to be Maj.
Lt. F. Heywood-Jones to be Capt.
Lt. L. P. Clarke, Res. of Off., to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. H. F. W. Boeddicker, having attained the age limit retires and retains his rank, with permission to wear the prescribed uniform.

INDIAN MEDICAL SERVICE.

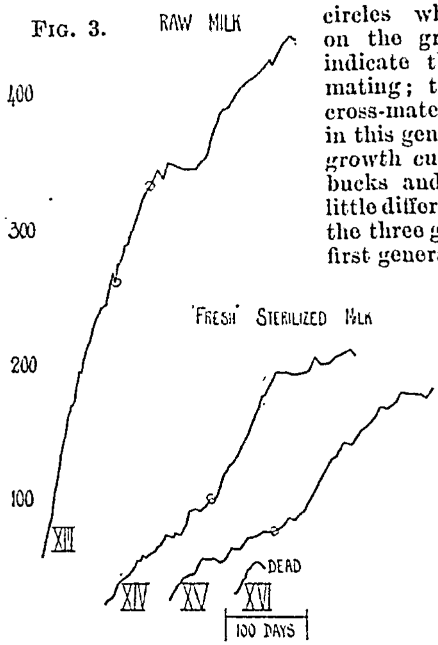
Capt. A. I. Cox to be Maj.
Lt.-Col. H. B. Steen retires.

COOKING IN LIVERPOOL HOSPITALS.—At the annual meeting last week of the Merseyside Association of Hospital Contributors (Penny in the Pound) Fund, a resolution was passed declaring that "the improvement of hospital cooking is long overdue" and suggesting that "a trained dietitian for the local hospitals be appointed." The superintendent of the Southern Hospital, Liverpool, states that he has never had a complaint about food.

weighed quantity gradually increased to 7 grammes for each adult rat. It was not possible by this method to get an accurate estimation of the weight of milk ingested, but it ensured that the rats were always *offered* more than they were likely to consume.

Fig. 1 shows the growth curves of the first generation of bucks in this experiment, and Fig. 2 that of the does. In each group the odd numbers represent rats from one litter and the even numbers those from another. The circles which appear on the growth charts indicate the dates of mating; the rats were cross-mated in all cases in this generation. The growth curves of both bucks and does show little difference between the three groups in this first generation.

FIG. 3.



First experiment. Second generation. Bucks.

RESULTS OF MATING.

As a result of the cross-mating already described all six does became pregnant. The does on raw milk, Nos. VII. and VIII., had respectively litters of 7 and 10 puppies. Of the 7, 4 were weaned at 25 days old (weighing 147 g.). Of the litter of 10, of which 9 were born alive and lived for 11 days, none was eventually weaned. If, however, we consider the number of days during which these does were lactating we find that the number of "lactation days" (number of pups × days of life) during suckling period was 232 days. This figure is of interest when considered in relation to the same factor in the other groups.

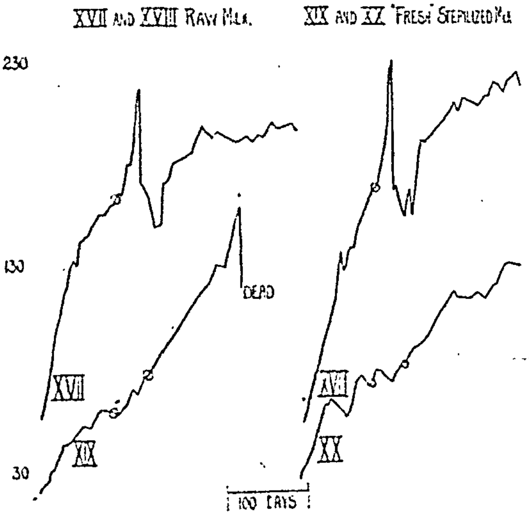
"*Fresh*" *Sterilised Milk.*—In the case of the two does on "fresh" sterilised milk only ten puppies were born, seven living and two dead ones from one doe (No. X.), and one dead one only from No. IX. Of these five (weighing 113 g.) were weaned from one litter, but the total number of "lactation days" for both does in this group was only 143.

TABLE I.

Type of milk.	No. of doe.	Pups born.	Born alive.	Weight of litter at birth in (gms.).	Weaned.	Weight at weaning (gms.).	Lactation days.
Raw ..	VIII. VII.	7 10 }17	7 9 }16	34 46 } 80	4	147	232
Fresh sterilised	X. IX.	9 1 }10	7 —	41 4 } 45	5	113	143
Kept sterilised	XI. XII.	2 —	2 —	8 —	— —	— —	5 —

"*Kept*" *Sterilised Milk.*—Doe No. XII. on kept sterilised milk died from lung trouble before the litter was born. From a post-mortem examination it was found that 11 ova had been fertilised, but that the fœtuses had been dead for some time before the doe died. The other doe, No. XI., had two puppies, both of which disappeared three days later. The number of lactation days of these does, therefore, was not more than five. These results are given in Table I.

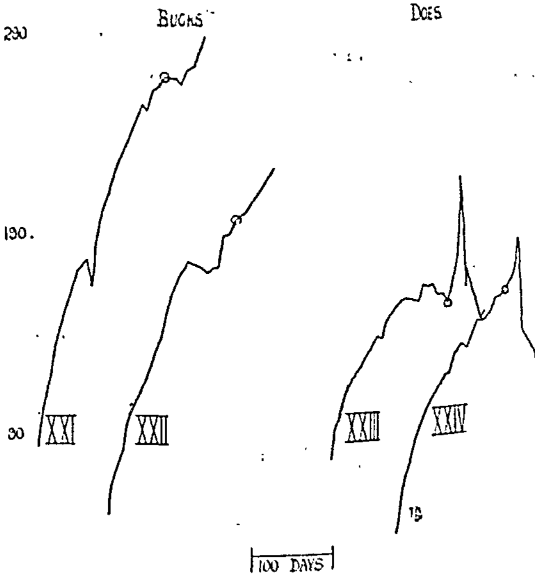
FIG. 4.



First experiment. Second generation. Does.

It is readily seen that although the actual number of puppies weaned was greatest in the "fresh" sterilised group, the number born alive, the weight at weaning, and the number of lactation days of the does were far greater in the case of the "raw" mil group than in either of the others, while no secon generation was available in the group on "kept" sterilised milk.

FIG. 5.

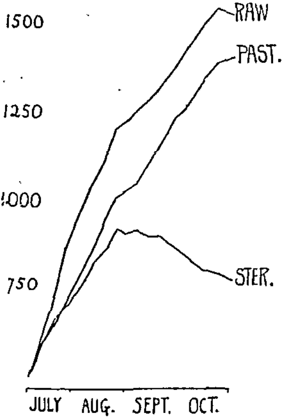


First experiment. Third generation on raw milk.

These results are accentuated in the second genera tion. The growth curves of the bucks and does o this generation are shown in Figs. 3 and 4, and hardly need comment, since it is very obvious that those on raw milk are incomparably better than those on the "fresh" sterilised. This is confirmed by photo 1.

The results of mating are equally significant. In this generation it was necessary in both groups to mate litter brothers and sisters: buck XIII. was mated with does XVII. and XVIII., all on raw milk, and produced litters of seven and ten pups respectively, all of which were born alive and weaned, being the third generation fed entirely on raw milk and cake only. Buck XIII. was also mated with doe R (curve not given), who at the first mating had four pups, all of which disappeared, but at a second mating had a litter of nine, all of which were living, and were weaned. Only first-mating litters are considered, but actually this buck was the parent of 30 pups from four matings, of which 26 were weaned.

FIG. 6.



Second experiment. Total weights of bucks in each group.

Very different results were obtained with the rats on fresh sterilised milk.

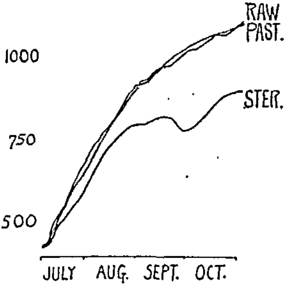
"*Fresh*" *Sterilised Milk.*—In the case of the raw milk the bucks were allowed to remain with the does for 16 days. With the "fresh" sterilised, they were not taken away until after 20 days, but as it was obvious that none of the does was pregnant, they were remated and allowed to remain with the does for about three months. At the end of this time doe XIX. had a litter of seven pups. All seven were dead by the following morning, only three were of normal size, and one was a freak. On the following day the doe was also dead. The other doe, No. XX., failed to show signs of pregnancy at any time.

TABLE II.—*Results of Mating the Second Generation Fed on "Raw" and "Fresh" Sterilised Milk.*

Type of milk.	No. of doe.	Pups born.	Born alive.	Weight at birth (gms.).	Weaned.	Weight at weaning (gms.).	Lactation days = pups × days suckled.
Raw	XVII.	7	7	40	7	194	175
	XVIII	10	10	49	10	197	250
	♀R. First mating	4	4	19	—	—	—
Totals . .		21	21	108	17	391	425
Fresh sterilised	XIX.	7	7	—	—	—	—
	XX.	—	—	—	—	—	—

The photograph of the bucks of this second generation (raw and fresh sterilised milk) shows the remarkable difference in the general appearance and size of these in the two groups. (Photo 1.)

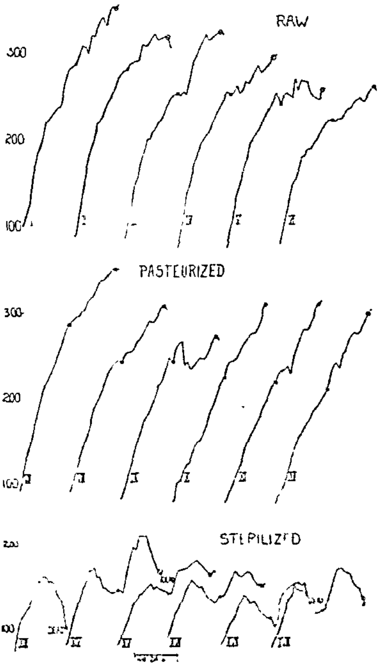
FIG 7.



Second experiment. Total weights of does in each group.

Third Generation on Raw Milk.—Six does and four bucks of the third generation on raw milk were kept for breeding purposes, their diet remaining exactly similar to that of the previous generation. No comparison with a group on sterilised milk can be made, since no third generation was available. Growth curves of two bucks and two does, Nos. XXI. to XXIV., are shown in Fig. 5. Cross-mating was arranged, and 20 pups of the fourth generation have been weaned from three does.

FIG. 8.

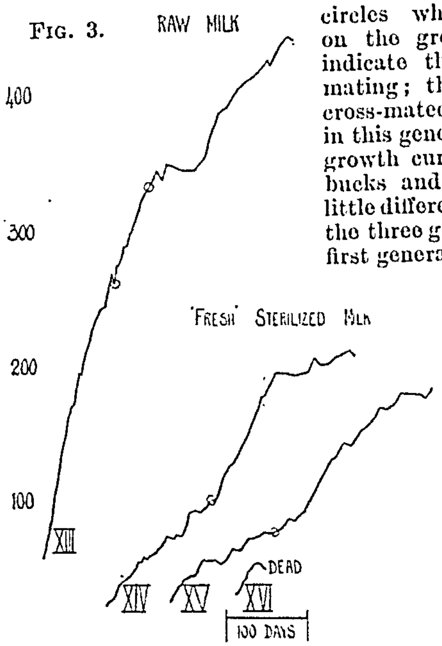


Second experiment. First generation. Bucks.

weighed quantity gradually increased to 7 grammes for each adult rat. It was not possible by this method to get an accurate estimation of the weight of milk ingested, but it ensured that the rats were always *offered* more than they were likely to consume.

Fig. 1 shows the growth curves of the first generation of bucks in this experiment, and Fig. 2 that of the does. In each group the odd numbers represent rats from one litter and the even numbers those from another. The circles which appear on the growth charts indicate the dates of mating; the rats were cross-mated in all cases in this generation. The growth curves of both bucks and does show little difference between the three groups in this first generation.

FIG. 3.



First experiment. Second generation. Bucks.

RESULTS OF MATING.

As a result of the cross-mating already described all six does became pregnant. The does on raw milk, Nos. VII. and VIII., had respectively litters of 7 and 10 puppies. Of the 7, 4 were weaned at 25 days old (weighing 147 g.). Of the litter of 10, of which 9 were born alive and lived for 11 days, none was eventually weaned. If, however, we consider the number of days during which these does were lactating we find that the number of "lactation days" (number of pups × days of life) during suckling period was 232 days. This figure is of interest when considered in relation to the same factor in the other groups.

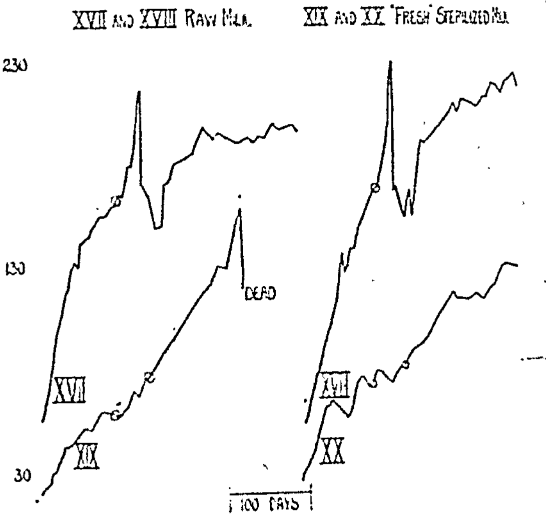
"*Fresh*" *Sterilised Milk.*—In the case of the two does on "fresh" sterilised milk only ten puppies were born, seven living and two dead ones from one doe (No. X.), and one dead one only from No. IX. Of these five (weighing 113 g.) were weaned from one litter, but the total number of "lactation days" for both does in this group was only 143.

TABLE I.

Type of milk.	No. of doe.	Pups born.	Born alive.	Weight of litter at birth in (gms.).	Weaned.	Weight at weaning (gms.).	Lactation days.
Raw ..	VIII. VII.	7 10 } 17	7 9 } 16	34 46 } 80	4	147	232
Fresh sterilised	X. IX.	9 1 } 10	7	41 4 } 45	5	113	143
Kept sterilised	XI. XII.	2	2	8	—	—	5

"*Kept*" *Sterilised Milk.*—Doe No. XII. on kept sterilised milk died from lung trouble before the litter was born. From a post-mortem examination it was found that 11 ova had been fertilised, but that the fœtuses had been dead for some time before the doe died. The other doe, No. XI., had two puppies, both of which disappeared three days later. The number of lactation days of these does, therefore, was not more than five. These results are given in Table I.

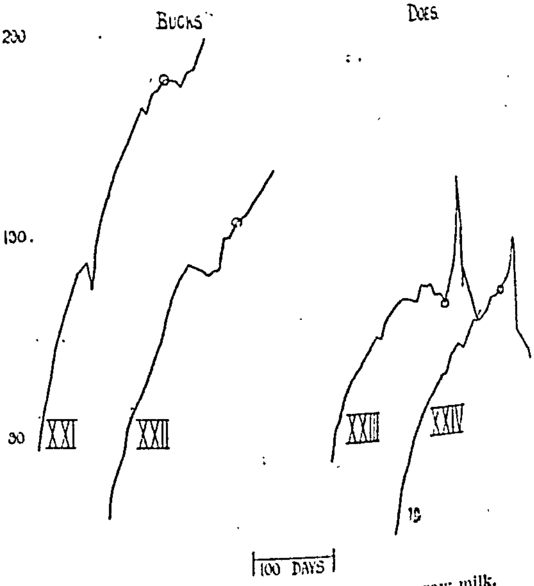
FIG. 4.



First experiment. Second generation. Does.

It is readily seen that although the actual number of puppies weaned was greatest in the "fresh" sterilised group, the number born alive, the weight at weaning, and the number of lactation days of the does were far greater in the case of the "raw" milk group than in either of the others, while no second generation was available in the group on "kept" sterilised milk.

FIG. 5.



First experiment. Third generation on raw milk.

These results are accentuated in the second generation. The growth curves of the bucks and does of

Recently the bucks and does on sterilised milk have been mated for a second time. Buck XIV., mated to two does, died a week later. The others were allowed to remain with the does for three weeks. It is interesting to note that none of the does showed signs of pregnancy.

TABLE III.

Treatment of milk.	Litters.	Pups.	Alive.	Weaned.	Lactation days = pups × days suckled.
Raw ..	6	47	41	18*	524
Pasteurised .	6	42	22	7†	169
Sterilised ..	—	—	—	—	—

* From four litters. † From one litter only.

Summary.

A method is described by means of which it is *demonstrated that raw milk with biscuit*, made only from white flour and water, is capable of sustaining the growth and reproduction of rats. A fourth generation on this diet at the time of writing is as healthy and normal as the previous generations. Sterilised milk fed under similar conditions failed to sustain life and reproduction, beyond the first generation except on one occasion, when a second generation of very stunted animals was produced. Even the original rats (the first generation) failed in many instances to reach maturity.

Preliminary experiments with pasteurised milk demonstrate results sufficiently marked to indicate that milk heated at a temperature of 145–149° F. for half an hour has undergone changes which have *considerably reduced its dietetic value.* The factors which are destroyed will form the subject of a future communication, but there are indications that the partial destruction of vitamin B_1 must be included *in the number.*

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

THE MEDICAL CURRICULUM.

Sir Norman Walker, President of the Royal College of Physicians of Edinburgh, presented prizes at the annual ceremony in St. Mungo's College, Glasgow, last week. In his address he pointed out that with the ever-increasing amount of knowledge, either a longer hospital education or a longer curriculum must be faced in the near future. In some of the United States every graduate, before receiving a licence to practise, was required to serve for 12 months as a hospital interne. Sir Norman's opinions are being voiced in other quarters, and recently the Students' Representative Council of Edinburgh University passed a recommendation for consideration by the authorities, recommending an increase in the medical course.

TREATMENT OF TUBERCULOSIS.

At a meeting of the Royal Victoria Hospital Tuberculosis Trust last week Sir Robert Philip pointed out that there has been a great improvement *in the death-rate from tuberculosis in all its forms;* to-day it is only a third of what it was in 1887. The work of the Trust was, he said, a national one, and it was necessary to take both wide and long views: one must think not in terms of a year but in decades and generations. The child was the important person in this disease, and it was in childhood that the best therapeutic results were to be expected; so the committee had *resolved to erect a special* pavilion for children at Southfield Sanatorium Colony. The Trust were not content to accept the view that anything less than tubercle-free herds of cattle should be aimed at because of the difficulties and expense; pasteurisation could not be accepted as the one solution of the milk-supply of the country. An appeal for help was made by the Trust, as their extension at Southfield this year would discharge £7000 from their capital. Further, the Trust were eager to obtain a sufficient endowment to ensure an annual expenditure of £6000 to £8000 on research for the next five years at least.

HOSPITAL MEETINGS.

The Earl of Home, presiding at the forty-eighth annual meeting of the Governors of the Royal Hospital for Sick Children, emphasised the value of the institution in training doctors for research work in the diseases of children. It was proposed, he said, to instal a completely equipped orthopædic department as a centre of organisation for carrying on this work in Glasgow and the West of Scotland. The hospital's county branch was reopened last autumn, and it was estimated that 1000 children would be treated each year; the financial side was also satisfactory, as the year closed with a substantial *balance on the right side.* Mr. William Adamson, M.P., who seconded the report, mentioned that 5247 patients had been treated in the wards, and there were 89,103 attendances as out-patients.

At the annual meeting of the Hospital Sunday Fund at Glasgow, the invaluable assistance rendered to the hospitals of the city was emphasised. The aggregate for the year amounted to £9392 which is only £379 less than last year, a very satisfactory result considering the great depression. Lord Provost Kelly, who presided, said that the Fund *tapped sources of income which would not otherwise* be approached, and pointed out the tremendous value of small donations.

Dr. William Muir, who died on March 12th, was one of the best known medical men in Davidson's Mains and the surrounding district. He graduated at Glasgow in 1888 and held the Menteith bursary. He held a number of official posts in the county, having acted as parochial medical officer for Cramond, and medical officer to the Cramond School Board. He was also a Justice of the Peace for the county of Midlothian.

The death has occurred at Greenock of Dr. James Laurie. For a long period he was leading surgeon at Greenock Royal Infirmary, and during nearly 50 years of practice he had *gained an honoured place* in his profession. During the war he gave valuable service in the large military hospital which was established in Greenock.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

AN IRISH PHARMACOPŒIA.

LAST week the Government introduced to the Dail a Bill to establish a pharmacopœia for the Irish Free State. Fortunately, no attempt is being made to compile a rival pharmacopœia to the British Pharmacopœia. The Bill provides that the British Pharmacopœia for the time being, subject to such modifications as may be made by the Medical

Registration Council of the Irish Free State, shall be the pharmacopœia of the Irish Free State. The Medical Registration Council is empowered to make modifications either by deletion or addition. The Bill further provides that it shall not be lawful for any persons to compound medicines of the Irish Free State Pharmacopœia, except according to its formularies. Contravention of this provision renders the offender liable to a fine of £10. It appears that there has been some doubt as to whether the British Pharmacopœia, though generally recognised, had a legal status as standard in the Irish Free State, and the legislation now promoted is intended merely to regularise the position. The British precedent of putting the official Pharmacopœia under the control of the Medical Registration Council is followed. This arrangement is, no doubt, convenient, but neither in Great Britain nor in Ireland is the Registration Council a body officially suitable to compile or control a pharmacopœia.

THE NEED FOR CLEAN MILK.

Many people in the Irish Free State who are interested in health are becoming a little uneasy in regard to the legislation introduced in 1929 to safeguard the milk-supply. It is noted that although a Bill dealing with the matter was introduced more than a year and a half ago, it has not been advanced any further. It is well known that the Bill was regarded with hostility by the farming and milk-dealing interests, and it is feared that the dilatoriness of the Government is not entirely due to pressure on Parliamentary time. At the annual meeting of the Royal National Hospital for Consumption last week, the President of the Royal College of Physicians of Ireland commented on the fact that the tuberculosis death-rate in Ireland was still very high, and that the improvement that had so far taken place was mainly in regard to pulmonary tuberculosis. He drew attention to the long delay in legislation designed to lessen the dangers arising from the milk-supply, and remarked that, while the Government had found time to introduce legislation intended to open the public-houses on St. Patrick's Day, it had not yet found time to deal with the milk-supply.

AUSTRALASIA.

(FROM OUR OWN CORRESPONDENT.)

UNDULANT FEVER IN AUSTRALIA.

AT a recent meeting of the Medical Science Club of Sydney Dr. A. H. Tebbutt reported the first indigenous case of undulant fever in New South Wales. Two indigenous cases had been previously reported from Victoria by Drs. W. J. Penfold and H. M. Butler.[1] The first report of this disease in Australia was by Dr. T. Storie Dixson in 1908[2] and was of foreign origin. Dr. Tebbutt's patient was a farmer aged 51 years, who was in the habit of handling aborting cattle. Contagious abortion is present in cattle in the district where he resides, but is unknown in horses and pigs. The main clinical features were a gradual onset with malaise, loss of appetite, prolonged fever with headache accompanying the evening rise, and the absence of other symptoms. Examination of the blood at about the fifth week showed that there was no agglutination of *Bacillus typhosus* or *paratyphosus* A or B. All *Br. abortus* strains were agglutinated with serum dilutions down to 1 in 640, but *Br. melitensis* only down to 1 in 80.

AN AUSTRALASIAN ASSOCIATION OF PHYSICIANS.

An association, called the Association of Physicians of Australasia (including New Zealand) has been formed, its object being the advancement of internal medicine and the promotion of friendship among physicians. Its membership is limited to not more than ten associate members resident in New Zealand, and at first, not more than 70 ordinary members who should be physicians actively engaged in the teaching of medicine, men of distinction in medicine and the allied sciences, or physicians recognised by the council as eligible. Two meetings will be held each year, excepting Congress year, when only one meeting will be held. These meetings will be held alternately in Sydney and Melbourne, or from time to time at the discretion of the council, in Adelaide. New members will be admitted only on election by ballot at the annual general meeting. Any member who is absent without special leave from three consecutive meetings shall cease, ipso facto, to be a member of the Association, except in the case of New Zealand members.

The idea of the Association originated in Melbourne and was first promulgated at a gathering of physicians during the Australian Medical Congress in 1929. As a result of this informal discussion, a meeting was called in Melbourne in June, 1930, when a number of senior physicians from Sydney and Melbourne decided to found the new body on the lines of the Association of Physicians of Great Britain and Ireland. The first meeting of the new society took place in Sydney in November, 1930. Sir Richard Stawell was elected President and Dr. Sydney Sewell hon. secretary. Sir Henry Maudsley and Dr. R. Scott-Skirving were elected honorary life members, and a number of new members were admitted. The day was spent in scientific discussion.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

CALMETTE'S REPLY.

IT was said of one of your statesmen, Gladstone, I believe, that he was terrible on the *rebound*. At a meeting of the Academy of Medicine on Feb. 24th, Calmette was caught on the rebound, and his counter-attack drew general applause. On his own proposal a commission of 12 was appointed to sift the evidence of doctors and midwives in France who have employed B C G since 1924. He insisted that the immunity conferred by the vaccine on cattle is only temporary; hence the advice to reinoculate every year. Many animals had been given six inoculations in the course of six years, but there had not been a single case in which B C G could be suspected of having provoked an extensive and virulent tuberculous lesion. From the bodies of 300 inoculated children who had died of various diseases, B C G had been recovered and reinoculated into susceptible animals; in no case had it been possible to demonstrate the least virulence for the guinea-pig. Referring to the observations of Dreyer in THE LANCET of Jan. 3rd, Calmette declared that he had never considered it impossible to discover a technique which might reverse the process he and Guérin had employed and turn B C G back into virulent tubercle. Anthrax vaccines could be converted by laboratory devices into an anthrax virus, the virus of rabies attenuated by passage through a monkey could be rendered more virulent by passage through a rabbit. If a similar transformation could be effected in the case of B C G, what argument would this be against prophylactic inoculation with it? If B C G was dangerous, what sense in limiting its use to the less resistant offspring of tuberculous parents? If innocuous, why withhold it from infants who, though to-day living in healthy surroundings, might to-morrow be exposed to infection?

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[1] Med. Jour. Austral., May 31st, 1930, p. 702.
[2] Australas. Med. Gaz., Jan. 20th, 1908, p. 23.

VENEREAL DISEASE PRIZES.

Two prizes are being offered in the campaign against venereal disease, one national, the other international. The National League will give two sums, each of 3000 francs, to the authors of the best original works on venereal disease. Candidates must send in their theses to the League at 44, rue de Lisbonne, Paris, before Oct. 1st, 1934. The other prize, of 5000 francs, will be awarded by the International Union for the best design to serve the campaign against venereal disease in the way the double cross of Lorraine serves the International Union against Tuberculosis. French candidates are asked to send their designs to the general secretariat of the Office National d'Hygiène Sociale, 26, Boulevard de Vaugirard, Paris, before May 1st next.

AN EFFECTIVE HEALTH FILM.

Dr. Louis Devraigne's film entitled *Le Voile Sacré* has been shown in the grand amphitheatre of the Sorbonne by Prof. Couvelaire, where it has made a most favourable impression. The true test of its popularity is of course yet to come. The central character is the young girl from the country, intelligent and enthusiastic. She learns the true meaning of "social service," an activity so essentially Anglo-Saxon that the term has been taken over without translation. The heroine returns to her modest niche in the country, and here we find her reforming everyone and everything, efficiently but unobtrusively. Dr. Devraigne is chief medical officer of the maternity department at the Lariboisière.

By a unanimous vote of its members, the *Conseil Supérieur d'Hygiène* has decided to put a stop to the use of certain chemicals in bread. This decision affects particularly bromine derivatives which, it is alleged, have had an injurious effect on consumers.

The Paul Ehrlich gold medal for 1931 has been awarded to Prof. Levaditi of the Pasteur Institute for his work on the chemotherapy of syphilis.

CORRESPONDENCE

THE IRRADIATION OF SCHOOL-CHILDREN.

To the Editor of THE LANCET.

SIR,—There is nothing we desire less than to prolong controversy with our old friend and colleague, Sir Leonard Hill. Our former letter was written to make clear what he now accepts, as we felt sure he would—namely, the responsibility of the M.R.C. Light Committee, and his own in special measure, for the "location of the school" and the "details of the test" in the Willesden experiment. His dissatisfaction with the result, however, finds vent in another imputation. The Light Committee, he suggests, and ourselves, as shown by our former letter, favoured an "official view" or "dogma," as to "the equivalence of ultra-violet radiation to the administration of vitamin D." "Equivalence" was, perhaps, not a strictly accurate word; but Sir Leonard Hill, at least, knows what we meant. It had been proved that ultra-violet radiation could replace administration of vitamin D, and the mechanism of its action in this case was known. The question before the Committee was whether ultra-violet radiation, in particular, contributed to health in other ways than this. So far from accepting any official dogma, or the views of any "European, American, or British authority on artificial light treatment," they decided, as scientific men, to try to put the matter to the test of a controlled experiment. The Willesden experiment was planned for this purpose, and the Committee, being satisfied that it had been so devised as to give a clear answer to this limited question, were prepared, as scientific men, to accept the result. If they had refused to accept it because it was negative, they could properly be accused of favouring a dogma.

We are, Sir, yours faithfully,
H. H. DALE.
S. R. DOUGLAS.

The National Institute for Medical Research,
Hampstead, March 14th, 1931.

To the Editor of THE LANCET.

SIR,—In their letter to THE LANCET of March 7th Dr. Dale and Captain Douglas sought from Sir Leonard Hill an acknowledgment of his share, as a member of the Medical Research Council's Light Committee, in the planning of the inquiry into the effect of irradiation on the health of school-children carried out in Willesden in 1928. It is satisfactory to see that in his reply in THE LANCET of March 14th Sir Leonard admits that he "agreed with the location of the school . . . and the details of the test." Since, however, the routine of dosage to be used was an important "detail," it is disconcerting to find that Sir Leonard suggests now, as he did in his paper in THE LANCET of Jan. 24th, that the children may have been overdosed. In my report [1] I discussed the question of dosage, but I think it may be advisable to restate certain facts.

It may be recalled that the 300 children were divided into three groups, two of which were irradiated, the one by a naked arc, the other by a similar lamp from which practically all the ultra-violet rays were cut off; the members of the third group served as controls.

1. The system of dosage was planned after careful consideration of the methods used under similar conditions in many light clinics in which successful results were attributed to the irradiation. In these clinics a considerable variety of strong and weak doses were used, and there appeared to be no clear relationship between the degree of irradiation given and the results claimed. The recommendation made to the Committee and adopted by them, therefore, was that a middle course should be followed in the Council's inquiry, and, in fact, doses were given which were quite moderate in intensity, as judged by the available standards.

2. The doses were carefully graduated from start to finish in the hope that while the children were under daily observation some indication might be gained of the relative effects of smaller and larger exposures. No significant evidence was obtained. The maximum dose mentioned by Sir Leonard Hill was reached only towards the end of the period when, after weeks of exposure, the skins of the children must have acquired considerable tolerance to the rays.

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[1] Medical Research Council, Special Report Series No. 131.

3. It may be confidently stated that the ultra-violet-irradiated children showed no evidence of harm in general health as compared with those of the screened lamp group, as judged by doctor and nurse, or by teacher and parent.

It is justifiable to speculate on the explanation of the negative results. For instance, the ultra-violet rays may be without effect in those particulars to which the test was directed; the doses used may have been too small; or they may have been too large, so that any beneficial effect was masked by a harmful effect in the individual child; or the response may have been such that the number of children benefited was balanced by the number harmed. In my opinion we are not yet in a position to decide to which of these or other causes the negative results should be related. In view, however, of the claims of other workers with very varied doses, it is at least unjustifiable to attribute them simply to overdosage.

I am, Sir, yours faithfully,

DORA C. COLEBROOK.

Northway, N.W., March 15th, 1931.

BARBITURATES AS BASAL HYPNOTICS.

To the Editor of THE LANCET.

SIR,—Will you permit me to comment upon your leading article last week (p. 595) entitled Accessories to Anæsthetics. I have been, to a large extent, responsible for the introduction in this country of Nembutal as a basal hypnotic in anæsthesia, and I feel that the shadow of doubt cast upon the newer barbiturates in this article is not altogether justified. It is true that the barbiturates, as a whole, are still on trial in connexion with anæsthesia, at any rate, in Great Britain, but as pointed out by me in a previous article,[1] the clinical evidence already collected is sufficient to permit definite conclusions to be drawn on the advantages and limitations of these drugs.

At the Mayo Clinic for example in the year 1929, barbiturates were employed in over 2000 anæsthetics,[2] and the same figures hold good for the year 1930. I am informed on good authority that nembutal continues to be extensively used at that clinic. I have used nembutal consistently for the past six months whenever a basal hypnotic has been desirable and intravenous administration capable of being carried out. I continue to be pleased with the results, particularly in patients who have had previous unhappy experiences before and after general anæsthesia. To say that undesirable symptoms often occur after nembutal is, to me, an exaggeration. The restlessness referred to may be observed after avertin, or even after ether. A visit to the out-patient clinic of any general hospital during the recovery period of children operated upon for tonsils and adenoids will confirm this. I agree, however, in the need for caution, and I pointed out in my article that a drug of such potency as nembutal should be employed to produce basal hypnosis by expert anæsthetists, and then only when indicated. It is obvious that if nembutal is followed by a badly administered general anæsthetic, or possibly even by clumsy surgery, it is unfair to lay the blame for any untoward result on nembutal alone.

The method of administration of nembutal seems to me to be of the greatest importance in arriving at correct dosage for basal hypnosis. Barbiturates vary widely in their action on different individuals, and nembutal is no exception. For this reason I believe it is unwise to attempt to obtain anything more than a pre-operative or post-operative sedative action, and this can be obtained with comparatively small doses. The definite production of basal hypnosis with nembutal should be reserved for cases in which intravenous injection is possible. If intravenous injection is impracticable or undesirable and basal hypnosis is desired, it is better to use other agents less variable in action.

The whole question of basal hypnosis is a matter of increasing importance. The protection from physic trauma and the lessened amount of anæsthetic required are advances which aid the scope of the surgeon. At present no single agent is capable of satisfying all requirements, but by a careful contribution of various agents it is already possible to produce satisfactory results in average cases.

I am, Sir, yours faithfully,

Wimpole-street, W., March 16th, 1931. I. W. MAGILL.

CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—In connexion with the increasing incidence of cases of cerebro-spinal fever, I note in your issue of March 7th (p. 555) a statement by Dr. Burton, medical officer of health for Ilford, that it is regrettable that at the present time type meningococcal sera for diagnosis are not available in this country. This statement is inaccurate as far as the Army is concerned. Type sera for purposes of diagnosis are manufactured at the Royal Army Medical College and have been constantly available for Army bacteriologists. These sera have, of course, been employed in the present outbreak. As an exceptional measure, owing to the emergency of the epidemic, supplies have in addition been issued to several civilian laboratories.

I am, Sir, yours faithfully,

H. MARRIAN PERRY,
Lieut-Colonel, R.A.M.C.

Pathological Department, R.A.M. College,
Grosvenor-road, S.W., March 16th, 1931.

"POISONING" IN ERODE.

To the Editor of THE LANCET.

SIR,—I notice in your issue of Jan. 31st under Notes from India that an account in the *Times of India* is quoted which describes "an extraordinary case of poisoning in Erode." The "account," which covers 12 lines in your paper, contains the following inaccuracies. It states: (1) That an outbreak of poisoning occurred recently in the London Mission, Erode. (2) That the outbreak was in connexion with the London Mission High School. (3) That 45 students died. (4) That the deaths occurred immediately after a meal. (5) That a cook also died. (6) That the outbreak was reported to be due to an aranai in the students' soup. (7) That the bite of the aranai is said, in the Tamil country, to cause instant death. And in the paragraph following this account you state, (8) that the sequel to this fatality has not been reported.

As to these statements, (1), (3), (4), and (5) are merely untrue. (2) The school referred to is an upper elementary school. There is no Mission High School in Erode. (6) No statement was made by any responsible person, or by any person who saw the sick boys, to the effect that the outbreak was due to poisoning. The report that an aranai had been found in the food emanated from the Erode bazaar, the gossip spread to the towns and villages around, and was sent to the press from a town 40 miles from Erode. (7) The aranai is a harmless lizard, but there is a superstition in the Tamil country that its lick is poisonous and will cause leprosy. It is difficult, however, to understand how an aranai that had been boiled in soup could either bite or lick. (8) A contradiction of this poisoning rumour, with the true facts of the cholera outbreak which actually occurred, was cabled to England on Dec. 8th and was published in the *Times*, *Daily Mail*, and other papers on Dec. 10th and in the Indian papers on the same date.

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[1] THE LANCET, Jan. 10th, p. 74.

[2] Proc. Staff Meetings, Mayo Clinic, vol. vi., No. 2, p. 27.

The truth is that cholera broke out in the community (upper elementary) school of the London Mission, Erode, on Dec. 3rd, 1930, and 32 boys succumbed to the disease during the five days following the first attack. Clinically the attacks were those of cholera of a most virulent type and cholera vibrios were recovered from the motions of patients and convalescents. It was unfortunate that the rumour as to poisoning, which was mere bazaar gossip, obtained such wide publicity. One wonders how much of the "news" about India which is sent home every day and accepted without question is equally unreliable.

I am, Sir, yours faithfully,

H. M. POLLARD,
Medical Officer London Mission Hospital, Erode.

Feb. 23rd, 1931.

⁂ The report in question was, as stated, quoted verbatim from the *Times of India*. It was stated in the original paragraph that the deaths occurred shortly after a meal, and this, if true, must have precluded any question of disease, however virulent. Our correspondent's comments show that he did not accept the account of the tragedy at its face value, but presumed that it would be a case for further inquiry.—ED. L.

OBITUARY

DAVID HEPBURN, C.M.G., M.D., F.R.S.Edin.,

EMERITUS PROFESSOR OF ANATOMY, CARDIFF.

WE regret to announce the death of Dr. David Hepburn, Emeritus Professor of Anatomy, University College, Cardiff, which occurred at his residence in Cardiff on Monday, March 9th, in the seventy-third year of his age.

David Hepburn was born in Milnathort, Kinross-shire, the son of a veterinary surgeon, and was educated at Brand's School, Milnathort, and at the University of Edinburgh. He graduated as M.B., C.M., with honours in 1881, and during 1882 he held resident appointments in the Royal Infirmary at Edinburgh. He was next appointed demonstrator of anatomy in the University and from 1885 to 1903 was the principal demonstrator and lecturer in regional anatomy in the University. In 1891 he proceeded to the M.D., securing the Beaney Prize in anatomy and surgery. He held the Edinburgh post until he went to Cardiff as professor of anatomy, thus starting the work with which he will always be associated, for he held the post until 1927, and when he retired his tenure of office had been extended for three years beyond the usual age-limit. From the moment he went to Wales he identified himself in an exceptional way with the new and growing school of medicine which was coming into existence. He became the first Dean of the Faculty of Medicine, a post he filled until 1922, after the Welsh National School of Medicine had been established as an integral part of the University College at Cardiff, with a full curriculum qualifying for the medical degrees of the University of Wales. Previously no clinical teaching was undertaken; during this period Hepburn's influence as a teacher and administrator contributed greatly to that development and success of the School which laid the foundations for its later expansion and recent creation as a separate school within the University. As a teacher he possessed personality, and that individual touch which establishes connexion between students and professor; hence he could impart knowledge and hold the interest of his listeners. He was aided by the possession of a clear, resonant voice and a faculty for making a felicitous and humorous speech at a moment's notice. His popularity was undoubted; and many are his old students who to-day will be recalling him to mind with affection and esteem. He devoted himself whole-heartedly to their interests and rendered valuable service to the cause of education. He encouraged and fostered such societies as the Medical Students' Club, of which he was oft-time President, and the College Choral Society, by energetic participation in their activities.

At the outbreak of the war in 1914, Hepburn who, six years earlier, on the formation of the Territorial General Hospitals, had been appointed to command the 3rd Western Hospital, showed considerable ability in organising both the work of the institution and its many auxiliary services; indeed, he found in military organisation an opportunity for working along lines which he enjoyed. During the whole duration of the war, and for the ten following years, he was a member of the General Medical Council, where his practical experience in medical education was valued by his colleagues. At his own University and the University of Edinburgh he held examinerships in connexion with the faculties of science and medicine, while he was an examiner in anatomy at different times to the English Conjoint Board and to the Universities of Oxford, Liverpool, Leeds, and Sheffield. His official appointments were numerous, for he had been president of the Anatomical Society of Great Britain and Ireland, of the Edinburgh Physical Society, of the Scottish Microscopical Society and the Cardiff Medical Society, and vice-president of the Scottish Natural History Society.

On his final retirement the title of Emeritus Professor was conferred upon him in recognition of conspicuous services to the College. He remained at Cardiff and continued as member of the Board of Medicine and of Committees to help on by his experience the work of others. Throughout his time in Wales he supported the institutions of the Principality. He served with zeal the Priory for Wales of St. John's Ambulance Association, in the establishment of which he played a prominent part, and was a Knight of Grace of the Order of St. John of Jerusalem. He was not a profuse writer, but none the less made some interesting communications to the literary needs of his subject and wrote the section on Arthrology in the 1913 edition of Cunningham's Anatomy.

He married Mary, the eldest daughter of Mr. J. I. Carson, of Hillside, Annan, Dumfriesshire, by whom he had one son and one daughter.

NAMES OF LONDON PUBLIC ASSISTANCE HOSPITALS. The St. Pancras (South) Hospital, the Hackney Branch Home, Brentwood, and the Edmonton Epileptic Colony are to be renamed St. Pancras Hospital, Brentwood Colony, and Edmonton Colony respectively.

used were potential poisons, and that the same substance which was wholesome if given in the proper dose became a poison if given in excess. For instance, strychnine, morphia, heroin, and a large number of new sleeping draughts, so necessary in our modern life, such as veronal, aspirin, and medinal, had come into use owing to the high pressure of civilised life. But these drugs given in excess became poisons. Therefore no distinction could be made between a substance which was a drug and a substance which was a poison in the large majority of cases. It therefore came to this, that in deciding very intricate questions as to whether particular drugs should be put into the scheduled list, there were highly technical and difficult questions which could only be decided by those who were intimately associated with the specialised knowledge of clinical medicine, with the specialised knowledge of pharmacy, and with the specialised knowledge of chemistry. That had been met up to now not at all badly, for the constituted authority under the present law was the Pharmaceutical Society. On the whole, the Society did their work very well because they were skilled, though he did not deny that they could make that body better by adding to those skilled pharmacists one or two skilled chemists and a representation of skilled hospital physicians. The Bill proposed to take the administration of poisons from this expert body, which had properly a very considerable discretion as to how it should act, and transfer it to the Secretary of State who was to be advised by a so-called Advisory Committee. He would show that the Advisory Committee was a sham. The Secretary of State had power to do almost anything. The real authority in regard to poisons would be transferred to permanent officials at the Home Office, for no Home Secretary could know anything about the technicality of poisons, and he would be subject to advice of officials who knew nothing about clinical medicine and whose point of view was really confined, and very ably confined, to people who were drug addicts, or who had criminal intent.

THE POISONS BOARD.

The Poisons Board could consist of 18 members. It would be an out and out bureaucratic body. Most of the members would have very little knowledge of the subject, and the people really concerned with the care of the sick, the medical profession, would have little or no power. A body which had been working for years most satisfactorily under the control of the Privy Council, and which consisted of expert pharmacists (strengthened he hoped in due course by expert doctors) were to be replaced by this extraordinary body which aimed at centralising all power inside the Home Office. That was a very bad provision, and if the Home Office had condescended to have consulted the medical profession before issuing this Bill there might have been no difficulty in convincing them that the right people to manage technical affairs were people with technical knowledge.

Lord PONSONBY said the Report of the Committee with the Bill attached had been out for a year and two months, and no comment had been made until the noble lord's speech that day by the medical profession.

Lord DAWSON said that that did not in the least alter the fact that the Bill had been issued without consulting the people most concerned, the people who possessed the knowledge. Time after time measures were brought forward without proper consultation with the medical profession. Although it was quite true that this Bill had been out for some time it should not have been brought forward at all without such a conference as he had suggested.

PRACTICE OF PHARMACY.

They all wished to see an improvement in pharmacy, but if the people who knew something about pharmacy had been consulted the provisions of the Bill would have been far better. He would supply one instance. It was part of the law that insured persons should have their medicines prescribed by doctors and dispensed by registered pharmacists. That was very proper, but by some curious anomaly if a patient was not an insured person no such protection was given. If he (Lord Dawson) wrote a prescription he had no power to demand that it should be dispensed by a registered pharmacist. That matter had not been put right in this Bill, which showed how completely foreign the subject was to the people who had ventured to try to put the Bill together. From that example, their lordships could judge many others. If they looked at medical history they would find that in the fourteenth century it was laid down that no medicines were to be dispensed except by a registered apothecary. This country was behind in these matters. No medicine should be dispensed except by registered pharmacists or under the supervision of a doctor. The right policy for the Government to pursue should not be concentration and centralisation, which simply meant mechanical government, but rather the delegation of those difficult problems to autonomous bodies, as had been done with broadcasting, and as he believed the present Government intended to do with transport. That was the right course to take with this difficult question of drugs and poisons. This Bill traversed the sound principle of Government, and for the reasons he had stated he asked their lordships to reject the measure. He was not against the improvement of the profession of pharmacy. It was part of the policy of the medical profession to bring together these ancillary callings and to raise their status; but how could that be done except by people acquainted with what was needed on the educational and administrative side? If by agreement a suitable measure could be produced, as he had little doubt it could, he was not against change as such, but it must be an improvement and not something like this Bill, which was nothing but a studied reaction.

FURTHER CRITICISM.

Lord ASKWITH endorsed the motion of Lord Dawson for the rejection of the Bill unless the Government could show that it was possible to extend it in such a way as to give that wider scope for what was aimed at by both the medical profession and the Pharmaceutical Society. If the Bill was confined to poisons alone he was informed that the Bill was quite worthless. It would not deal with such subjects as vaccine, thyroid glands, sera, &c., which unless looked after grew old and stale and possibly poisonous. Also there should be elasticity by which new substances which might be invented, or become poisonous in the estimation of scientific authorities, in the future could be included in the poisons list.

The Earl of ONSLOW said that the points raised against the Bill could be met in committee. He therefore recommended their lordship to give the Bill a second reading with a view to improvements being made in committee.

Lord STRACHIE supported Lord Onslow's suggestion.

The Earl of HALSBURY said that if the Government would give the House an assurance that they would consider with a certain amount of favour before the committee stage some amendments of the Bill he would not oppose the second reading, but otherwise he would support the motion of Lord Dawson.

Viscount LEVERHULME said he supported what Lord Dawson had said about the desirability of the medical profession being consulted in regard to a Bill of this kind.

Lord COZENS-HARDY said that in his view this Bill was one of the worst examples of Departmental usurpation. He strongly supported the stand which Lord Dawson had taken, and he hoped that Lord Ponsonby, realising the force of the arguments which have been advanced, would see his way to agree to modify the Bill to meet Lord Dawson's objections. If that were done he (Lord Cozens-Hardy) would vote for the second reading.

Lord Ponsonby Replies.

Lord PONSONBY, replying to the debate, assured the House that the Government intended to take into account all bodies of opinion closely concerned with this question of the sale and control of poisons. He thought that Lord Dawson was perhaps a little unfair in saying that no attempt had been made to consult the medical profession, because after all Sir Donald MacAlister must be regarded as a very high medical authority and he was on the Departmental Committee. The Committee's Report with the Bill had been published now for over a year, and the Government and the authorities of the Home Office would have been only too glad to have had close consultations with high medical authorities in the same way as they had had consultation with the Pharmaceutical Society. The noble lord's fear that the Home Secretary's power of overriding the opinion and advice of the Committee, the constitution of which he strongly disapproved of, was hardly justified. If the matter was left to the Secretary of State with Parliamentary sanction as well, it seemed to him that the control would be far greater than if it was delegated to some private body who could act without the public being aware of its decision. Lord Askwith had raised the question of extending the Bill to such things as vaccine, sera, and thyroid extracts. No inquiry had been instituted into that branch of the subject, and the Government felt that it was not advisable to go beyond the actual question of poisons. That was the only point on which the Government could not accept any extension or amendment of the Bill. With regard to all the other points raised—the constitution of the Poisons Board, the exact power of the Secretary of State to override decisions, or to use an unfettered discretion, the Government would be open to consider amendments in Committee and would give due weight to the expert opinion in their lordships' House. Naturally the opinion of such a high authority as Lord Dawson carried so much weight, that the Government would not dream of going forward feeling that he was in opposition even though a Division had been taken in which the Government had secured a majority. It would be unsatisfactory on a technical Bill of this sort to have any division of opinion at all. If Lord Dawson would agree, he (Lord Ponsonby) would suggest that before the Committee stage a full consultation should be held with representatives of the medical profession. It might be possible, for instance, for the Registrar of the Royal College of Physicians to get together a representative body who could consult with the officials of the Home Office and with those who would be responsible for the further stages of the Bill. The Government would postpone the Committee stage until Thursday, March 26th. Beyond that he could not go, because unless the Bill could be sent to the House of Commons before Easter its prospects of passing into law this session would be very remote.

Lord ASKWITH said that he was told that this Bill was worthless unless such matters as vaccines, thyroid glands, and sera were introduced within the power of the Poisons Board. Could Lord Ponsonby give an indication that a speedy inquiry would be set up to see whether an amending Bill could be brought in to include those substances?

Lord PONSONBY said that that was a suggestion which could be considered later.

Lord DAWSON said that it was very difficult for him to promise that such a conference as had been suggested by Lord Ponsonby could be held with any chance of success in dealing with so comlex a question within the limits of a fortnight. He would do his best to see if it could be done, but he must express grave doubt whether he could do it.

Replying to Viscount BERTIE OF THAME, Lord PONSONBY said that he thought that the Government would have to proceed with the Bill whether the proposed conference came to anything or not before March 26th.

The Bill was read a second time and committed to a Committee of the whole House.

YARMOUTH NAVAL HOSPITAL BILL.

In the Committee stage of the Yarmouth Naval Hospital Bill in the House of Lords on March 10th Viscount MERSEY moved an amendment making Subsection (1) of Clause 5 read as follows: "The Admiralty may, on such terms as to payment and otherwise as they may think fit, receive into Yarmouth Hospital as a voluntary patient any such person as is desirous of voluntarily submitting himself to treatment for mental illness and who makes a written application for the purpose to the Admiralty." Lord AMULREE accepted the amendment on behalf of the Government, and it was agreed to. Viscount MERSEY also moved a new clause designed to allow persons who might have been wronged to bring action on a bona fide cause of complaint. This, too, was accepted by the Government, and on Thursday, March 12th, the Bill was read the third time and passed.

UNIVERSITY CONSTITUENCIES: GOVERNMENT DEFEAT.

IN the House of Commons on March 10th the representation of the People Bill was further considered in Committee. Sir R. YOUNG was in the chair. On Clause 4 (Abolition of University Constituencies) Mr. ROSS moved to leave out Subsection 2. He explained that the effect of the amendment would be to allow the Queen's University, Belfast, to continue to return a Member to Parliament. After discussion the amendment was defeated by 178 votes to 168. The Committee then discussed an amendment moved by Lord HUGH CECIL to delete Clause 4 from the Bill altogether. After a lengthy debate, the amendment was carried by 246 votes to 242—majority against the Government, 4.

MENTAL TREATMENT RULES.

Mr. GREENWOOD (Minister of Health) moved the following resolution in the House of Commons on March 16th:—

> "That the Mental Treatment Rules, 1930 (Statutory Rules and Orders, 1930, No. 1083), dated Dec. 30th, 1930, and made by the Board of Control, with the approval of the Lord Chancellor, under Subsection (1) of Section 338 of the Lunacy Act, 1890, as extended by Subsection (1) of Section 15 of the Mental Treatment Act, 1930, which were presented on Jan. 20th, 1931, be approved so far as they modify or adapt any of the provisions of the Lunacy Act, 1890."

After discussion the resolution was agreed to.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 11TH.

First-aid Outfits in Motor Coaches.

Mr. SORENSEN asked the Minister of Transport whether he would consider compelling proprietors of motor coaches to have first-aid outfits carried on their vehicles.—Mr. HERBERT MORRISON replied: I have this point under consideration in connexion with the further regulations which will shortly be made dealing with the use and equipment of public service vehicles.

Persons Found Dead in London Streets.

Mr. OLIVER BALDWIN asked the Home Secretary how many men, women, and children had been found dead in the streets of the metropolitan area during the first two months of the present year.—Mr. CLYNES replied: The numbers of persons found dead in the streets and public places of the metropolitan police district during the months of January and February, 1931, are as follows: men, 85; women, 30; children under 16 years of age, 2; newly-born infants, 12; total, 129.

Medical Officers in the Air Force.

Lieut.-Colonel FREMANTLE asked the Under-Secretary for Air the total establishment of medical officers in the Air Force and the shortage of regular medical officers on the establishment in each year since the war.—Mr. MONTAGUE replied: The following table shows the figures required in respect of the years for which statistics are available:—

Year.	Establishment.	Deficiency.	Year.	Establishment.	Deficiency.
1920	142	29	1926	210	51
1921	141	50	1927	204	40
1922	177	55	1928	204	26
1923	197	65	1929	205	28
1924	213	68	1930	210	39
1925	219	70	1931	210	46

These deficiencies of regular officers have been made good to a substantial degree by the engagement of doctors on contract, either on a commissioned or on a civilian basis.

THURSDAY, MARCH 12TH.

Vaccination and Encephalitis.

Mr. LEACH asked the Minister of Health whether, in view of the recommendation given on page 72 of the last report of the Rolleston Committee on Vaccination in regard to the use of antivaccinal serum to mitigate the dangerous encephalitic effects of vaccination, which showed that, notwithstanding the improved methods of performing the operation which had recently been introduced, it was still impossible to guarantee that it would not be followed by nervous complications of a serious character, he would either cease to enforce the operation or compensate the parents in cases where dangerous results arose.—Mr. GREENWOOD replied: I have no power to suspend or vary the provisions of the Vaccination Acts, which do not provide for the payment of compensation in such cases as my hon. friend mentions. I may, however, point out that the compulsory requirements of the Acts are in effect limited to infants under 12 months of age, and that in this class the occurrence of post-vaccinal encephalitis has been practically negligible.

The Dumping of Town Refuse.

Lieut.-Commander KENWORTHY asked the Minister of Health whether he could make any further statement about the prevention of the dumping of town refuse by certain municipalities, or contractors acting for them, in the open country, especially in certain districts around London; and how many local authorities now disposed of refuse by incinerating.—Mr. GREENWOOD replied: I have pressed the metropolitan authorities to discontinue insanitary dumps, and action has been taken or is contemplated by a number of them. Some authorities in the neighbourhood of London have made by-laws under which precautions can be enforced to prevent any nuisance from refuse tips. Returns for the year 1928–29 from 216 of the larger urban authorities show that 138 (19 being in London) incinerated part or the whole of their refuse.

Tuberculosis among Dairy Cattle.

Mr. LONGBOTTOM asked the Minister of Health if he had considered a resolution of the Halifax county borough council requesting that, owing to the high incidence of tuberculosis among dairy cattle, he would amend the Milk and Dairies Acts of 1915 and 1926 so as to confer on local authorities the power to make compulsory the notification of all cattle arriving in their respective areas within 48 hours of arrival; and would he arrange to introduce legislation to meet this request.—Mr. GREENWOOD replied: I have received this resolution from the councils of several county boroughs, and will consider it in consultation with my right hon. friend, the Minister of Agriculture and Fisheries.

Medical Benefit Regulations.

Sir KINGSLEY WOOD asked the Minister of Health if he had taken any steps recently, by regulations or otherwise, to afford further protection to the National Health Insurance funds against abuse; and if he proposed to take any further action.—Mr. GREENWOOD replied: Yes, Sir. Two important changes in the medical benefit regulations have already been made, the first with reference to the transfer of insured persons from one doctor to another, and the second with reference to lax certification. I am also proposing, at an early date, to issue to all insurance doctors a memorandum, and to all approved societies a circular, giving the results of the recent investigations into the increase of sickness and disablement benefit claims and advice on medical certification and the supervision of claims respectively.

Nutritional Value of Milk.

Brigadier-General CLIFTON BROWN asked the Minister of Health whether he would arrange for a study to be made of the relative nutritional values of the different types of milk on sale, either by the Medical Research Council or by the committee which the Government had recently set up to study the nutrition of the nation; and whether the research experiments of the Dairy Research Institute at Shinfield in that direction would be carefully considered.—Mr. GREENWOOD replied: I will consider the hon. Member's suggestion.

MONDAY, MARCH 16TH.

Medical Treatment in Poor-law Institutions.

Mr. WARDLAW-MILNE asked the Minister of Health whether the Government would consider introducing legislation to remove the disqualification which inmates of a workhouse or other poor-law institution suffered as a result of being admitted on account of destitution and subsequently receiving medical treatment, which led to the practice of such persons leaving the institution for one day and being readmitted as medical cases.—Mr. HAYES (Vice-Chamberlain of the Household) replied: The answer is in the negative.

Local Authorities and Slum Clearance.

Mr. O'CONNOR asked the Minister of Health how many local authorities had failed to prepare a slum-clearance scheme and a five-year housing policy; and what proportion that represents of all local authorities.—Mr. GREENWOOD replied: Programmes for the next five years have been received from 268 of the 290 urban authorities representing populations over 20,000 who are required by the Act of 1930 to submit such programmes; 183 of these definitely contemplate the provision of houses for the replacement of unfit houses, and the total number of houses to be so provided in the five years is 103,080.

Boys Killed in Coal-mines.

Mr. COVE asked the Secretary for Mines the number of boys, aged from 14 to 16, employed in British coal-mines; and the number of fatal and non-fatal accidents, respectively, occurring in the age-group in 1930.—Mr. SHINWELL replied: At Dec. 31st, 1930, the number of boys under 16 years of age employed in Great Britain in and about mines under the Coal Mines Act, 1911, was approximately 36,000, and the number of such boys killed during 1930 was 30. I regret that particulars of the number of boys injured are not yet available.

Child Marriages in India.

Miss RATHBONE asked the Secretary for India whether, in view of the suspension of the civil-disorder movement in India, it was now the intention of the Provincial Governments to commence enforcing the Sarda Act in restraint of child marriage.—Mr. WEDGWOOD BENN replied: The enforcement of the Act has in no way been affected by the civil-disobedience movement.

Medical Services in India.

Lieut.-Commander KENWORTHY asked the Secretary for India, in view of the fact that on all previous occasions when increments in pay and pension had been sanctioned by the Secretary for India these were given without distinction to both military and civil officers of all branches of the Army, including the Indian Medical Department, why the 1929 revised rates of pay for the Indian Medical Department had been sanctioned for those in military employ only, and had not been given to those loaned for civil medical employment in the provinces; whether he was aware that, although the Madras Government had sanctioned the increased rates of pay to its civil Indian Medical Department officers, the other provinces, as also the State railways and the Government of India, had refused it to *their* Indian Medical Department civil medical officers; why such distinction had been made in the Indian Medical Department; and whether he was prepared to take steps to inquire into the matter and remedy this position.

Also whether, seeing that the Indian Medical Department (Military Assistant Surgeon Branch) was an all-Indi service under the administration of the Government of India and the control of the Secretary of State as regarded pay and pensions, he would state whether its officers were recruited in all cases under the same terms of agreement and whether it was a cadred service; and, seeing that those of its officers whose services were loaned to Provincia Governments were, like similar Indian Medical Servic officers, considered as the war reserve of the Army (Indi Medical Department), would he consider giving them equ treatment with similar Indian Medical Service officers.—Mr. WEDGWOOD BENN replied: The assumption on which th questions are based are not quite accurate. Although th Indian Medical Department has a definite cadre, it is not a all-India service like the Indian Medical Service. Militar assistant surgeons are attested as soldiers under the Arm Act on first appointment. While they are in militar employ their conditions of service are governed by Arm regulations; but on transfer to civil employ they come und the control of the civil authorities, who have full power t determine their rates of pay. So far as I am aware, there some degree of competition for civil employ, and the cond tions of service are well understood. In the circumstance I do not feel justified in suggesting to the civil authoritie an increase in the rates which they have decided are adequat

Medical Officers in the Air Service.

Lieut.-Colonel FREMANTLE asked the Under Secretary fo Air the number of medical officers on the establishment o the Air Service, and the average strength of medical office in each of the last five years.—Mr. MONTAGUE replied: The following table gives the figures required:—

MEDICAL OFFICERS, ROYAL AIR FORCE.

Year.	Establishment.	Average strength.	Deficiency.
1926	210	184	26
1927	204	181	23
1928	204	188	16
1929	205	188	17
1930	210	190	20

The strength figures include medical officers serving on contract either on a commission or a civilian basis.

TUESDAY, MARCH 17TH.

Naval Medical Officers.

Lieut.-Colonel FREMANTLE asked the First Lord of the Admiralty the total establishment of naval medical officers and the shortage of regular medical officers on the establishment in each year since the war.—Mr. AMMON (Parliamentary Secretary to the Admiralty) replied: Consequent on the continuation of the employment of temporary medical officers who had served during the war and the transfer to the permanent list of a certain number of such officers, no shortage of naval medical officers was experienced up to and including 1922. The shortages in subsequent years as compared with requirements, which include provision for officers undergoing courses, have been as follows:—

Year.	Requirements.	Shortage.	Year.	Requirements.	Shortage.
1923	416	24	1927	402	21
1924	395	2	1928	402	12
1925	397	7	1929	396	24
1926	392	2	1930	399	44

Coöperative Societies and Insurance Prescriptions.

Sir KINGSLEY WOOD asked the Minister of Health when he proposed to make the regulation which would permit coöperative societies to make a monetary payment to their customers in respect of national health insurance prescriptions.—Miss LAWRENCE (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend understands that certain legal proceedings have been instituted in this matter, and he would therefore prefer at the moment not to make any statement on the point raised by the right hon. Member.

Housing in Scotland.

Mr. DUNCAN GRAHAM asked the Secretary for Scotland whether he could give any estimate of the average proportion of income spent in house rent in the areas which had been or were being the subject of slum-clearance schemes in Hamilton.—Mr. ADAMSON replied: I am informed by the Town Clerk of Hamilton that as a result of a local investigation in April last, it was estimated that the average proportion of income spent on rent (including occupiers' rates) was 11·5 per cent. in respect of the particular slum area investigated, which comprised over 100 houses.

Mr. WESTWOOD asked the Secretary for Scotland, seeing that the medical officer of health for Midlothian had declared that 711 houses were required to meet the deficiency of houses in the county and that the county council had only agreed to provide 140 houses during the next three years, what action he proposed to compel the county council to deal with this situation.—Mr. JOHNSTON replied: My right hon. friend is aware of the estimated deficiency stated in the hon. Member's question. The Department of Health for Scotland have made representations to the County Council of Midlothian as to the inadequacy of their proposals for the erection of houses during the next three years, and have asked them to consider the erection of a much larger number of houses than the number at present proposed. On receipt of the County Council's reply, the question as to what further action, if any, should be taken will be considered.

Cerebro-spinal Fever.

Mr. FREEMAN asked the Secretary for War the date on which each sufferer in the Army from cerebro-spinal meningitis was taken ill this year: the date of death or when released from hospital; and the date when each person was last vaccinated, and Mr. GROVES asked how many cases of cerebro-spinal fever had occurred amongst soldiers in this country during the present year: and how many of the cases proved fatal.—Mr. T. SHAW: The information is as follows: Table showing the dates of (a) admission to hospital, (b) death, where it occurred, (c) last vaccination, in the case of soldiers, their families &c., who have been admitted to hospital suffering from cerebro-spinal fever during the present year up to March 12th.

A. = Date of admission to hospital in 1931.
B. = Date of death in 1931.
C. = Date of last vaccination.

A. Jan.	B. Jan.	C.
7 ..	— ..	June, 1927.
28 ..	30 ..	May 1, 30 (failed). June 13, 30 (re-vacc.).
	Feb.	
30 ..	7 ..	Feb. 13, 30.
Feb.		
1 ..	— ..	Jan. 8, 30.
1 ..	3 ..	Apr. 9, 30.
3 ..	— ..	Jan. 16, 31.
3 ..	6 ..	May 30, 30.
3 ..	4 ..	At 3 mths. ? May, 1928.
4 ..	9 ..	Mar. 7, 29.
4 ..	— ..	Jan. 13, 27.
4 ..	5 ..	Mar. 25, 30.
7 ..	10 ..	Sept. 11, 29.
8 ..	9 ..	Not known.*
10 ..	— ..	Dec. 20, 27.
11 ..	— ..	Feb. 7, 31.

A. Feb.	B. Feb.	C.
16 ..	18 ..	Jan. 22, 31.
18 ..	— ..	Nil.
18 ..	— ..	Nil.
19 ..	24 ..	†
20 ..	— ..	May 8, 30.
20 ..	— ..	Nov. 18, 30.
	Mar.	
20 ..	4 ..	Aug. 26, 30.
21 ..	— ..	Feb. 1, 31.
	Feb.	
21 ..	21 ..	} †
22 ..	25 ..	}
26 ..	— ..	Aug. 20, 30.
28 ..	— ..	Apr. 6, 29.
Mar.		
8 ..	— ..	Apr. 23, 29.
8 ..	— ..	Feb. 19, 31.
	Mar.	
10 ..	12 ..	Jan. 2, 29.
12 ..	— ..	Nov. 18, 29.

* But not recently. † No information available.

Note.—No patients have yet been discharged from hospital.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 7TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 227; scarlet fever, 1500; diphtheria, 1046; enteric fever, 35; pneumonia, 2273 (last week 2706); puerperal fever, 40; puerperal pyrexia, 109; cerebro-spinal fever, 73 (same as last week); acute poliomyelitis, 2; encephalitis lethargica, 18; continued fever, 1; dysentery, 11; ophthalmia neonatorum, 100. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 10th–11th was as follows: Small-pox, 189 under treatment, 5 under observation (last week 188 and 1 respectively); scarlet fever, 1365; diphtheria, 1880; enteric fever, 238; measles, 117; whooping-cough, 302; puerperal fever, 27 (plus 10 babies); encephalitis lethargica, 122; poliomyelitis, 2; "other diseases," 167. At St. Margaret's Hospital there were 14 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox or enteric fever, 73 (0) from measles, 7 (2) scarlet fever, 48 (8) whooping-cough, 42 (7) diphtheria, 59 (14) diarrhœa and enteritis under two years, and 471 (65) from influenza. The figures in parentheses are those for London itself.

The only death from meningococcal meningitis occurred in London and that was under one year of age. Fifteen fatal cases of measles were reported from Liverpool, 9 from Newcastle-on-Tyne, 7 from Birmingham, 5 each from Nottingham and Birkenhead. Liverpool again reported 6 deaths from whooping-cough. Diphtheria claimed 5 victims at Liverpool, 4 at Birmingham, and 3 at Hull. The deaths from influenza were fewer than in the preceding two weeks: the 406 fatal cases outside London are scattered over 90 great towns: 44 were reported from Manchester, 23 from Birmingham, 14 from Nottingham, 13 each from Liverpool and Bradford, 12 each from Leeds and Hull, 11 from West Ham, and 10 from Stockport.

The number of stillbirths notified during the week was 289 (corresponding to a rate of 42 per 1000 births), including 49 in London.

NORTHERN HOSPITAL, MANCHESTER.—The seventy-fifth annual report of the Manchester Northern Hospital for Women and Children says that nearly 1500 in-patients were treated last year, and that 18,357 consultations were given in the out-patient department. The increase of in-patients was 181 and of out-patient attendances 958. The total ordinary expenditure increased by about £400, and the total ordinary income fell by £100. A new hospital for women and children is to be built on Alms Hill at a cost of over £90,000.

MEDICAL NEWS

University of Cambridge.

On March 13th, the following degrees were conferred:—

M.D.—J. H. Doggart.
M. Chir.—N. R. Barrett, and E. D. Moir.
M.B. & B.Chir.—M. E. Albury.
B. Chir.—J. G. Wigley.

Honorary degrees are to be conferred on Dr. J. S. Haldane, F.R.S., honorary professor and director of the mining research laboratory in the University of Birmingham, and Dr. A. M. Daniel, director of the National Gallery.

Royal College of Surgeons of England.

A meeting of the Council was held on March 12th with Lord Moynihan, the President, in the chair. Mr. Gwynne Williams, surgeon to University College Hospital, was re-elected a member of the Court of Examiners for a further period of five years.

The Fellowship of the College was conferred on Mr. Edward Grainger Muir, of Middlesex Hospital, who holds the Bernhard Baron research scholarship. Licences in dental surgery were granted to the following candidates, who were successful at the recent examination:—

W. O. Baird, E. B. Carpenter, G. E. Chadd, T. A. Chandler, S. E. Charman, G. H. Dakers, J. O. Gordon, C. C. Grant, E. L. Heath, Constance M. Henderson, William Hughes, C. A. Kirton, J. W. Mansie, E. H. Randerson, R. H. Robertson, W. K. Scantlebury, H. C. Skillington, Leslie Sparey, H. N. Toomey, Gordon Wallis, and A. E. Williamson.

Diplomas in ophthalmic medicine and surgery were granted, jointly with the Royal College of Physicians, to 18 candidates.

Royal Faculty of Physicians and Surgeons of Glasgow.

At a meeting on March 2nd, Dr. David McKay Hart and Dr. Margaret Taylor Tindal, both of Glasgow, were admitted, after examination, as Fellows of Faculty.

University of London.

At a meeting of the University Court on March 11th approval was given to the acceptance by the London School of Economics of an offer from the Commonwealth Fund of approximately £3600 a year for not less than three years for the provision of a course of training for psychiatric social workers. This grant will enable the school to extend somewhat the work which it has already been doing in coöperation with the Child Guidance Council during the past three years. About half of the grant will be available for scholarships for students taking the course.

Course on Mental Deficiency.

A course of lectures, for medical practitioners, on Mental Deficiency and other Mental Conditions closely allied to it, will be held under the auspices of the Central Association for Mental Welfare, from May 4th to 16th, at the University of London, Imperial Institute-road, South Kensington, S.W. It will be supplemented by a clinical instruction, and is divided into two parts which may be taken separately. Particulars may be had from Miss Evelyn Fox, c/o University Extension Dept., at the above address.

A Vickers Cot.

Since it was formed shortly after the outbreak of the late war, the Vickers' employees war relief fund, at Sheffield, has disbursed more than £51,000 in allowances to men who served in the Navy and Army, and their wives, children, and dependents. The fund has now been wound up and the balance of £500 has been used to endow a cot, which the Bishop of Sheffield dedicated last week, in the Cleaver ward of the Sheffield Children's Hospital.

Fellowship of Medicine and Post-Graduate Medical Association.

Several special courses will be held after Easter. From April 13th to 18th there will be an all-day course in gastro-enterology at the Prince of Wales's Hospital in association with the North Middlesex Hospital; from April 13th to May 9th an afternoon course in Venereal Diseases at the London Lock Hospital; from April 20th to 25th an all-day course in Diseases of Chest at the Brompton Hospital; from April 27th to May 9th a morning course at the Hospital for Sick Children, and an afternoon course at the Infants' Hospital; from April 21st to May 30th, an afternoon course in Psychological Medicine at the Maudsley Hospital, and from April 27th to May 23rd an intensive course in the Central London Throat, Nose, and Ear Hospital. Full particulars of these and other courses may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

London School of Hygiene and Tropical Medicine.

At this school on March 13th Sir Gowland Hopkins, President of the Royal Society, unveiled a plaque in memory of the late Lord Wandsworth, who left £10,000 to found a scholarship for medical research.

Hospital Service of London.

On Thursday, March 26th, at 8.30 P.M., Mr. H. S. Wellcome, LL.D., is giving a reception at the Wellcome Historical Medical Museum, Wigmore-street, London, W. Lord Macmillan and Sir George Hume will speak on The Hospital Service of London.

Order of St. John of Jerusalem.

From June 22nd to 27th this Order will celebrate the centenary of its revival in Great Britain. An appeal is being made for £100,000 to provide suitable headquarters and endowment.

Naval Medical Compassionate Fund.

A meeting of subscribers to this Fund will be held at 3 P.M. on April 16th at the Medical Department of the Navy, Queen Anne's Chambers, Tothill-street, Westminster, S.W. 1, to elect six directors.

Medical Tour in Germany.

A tour of German spas and countryside has been arranged for June 1st to 12th exclusively for members of the medical profession. Among the places visited will be Aix-la-Chapelle, Nauheim, and Neuenahr, and there will be a motor trip through the Eifel and the Rhine country. Particulars may be had from the organiser, Mr. Robert Rohme, 90, Sheaveshill-avenue, Colindale, London, N.W. 9.

Nottingham Cripples' Guild.

Last year there was an enormous growth in the work at the clinics, attendances increasing by nearly 6000 over 1929.

Royal Medical Benevolent Fund.

The annual meeting of this Fund will be held at 11, Chandos-street, Cavendish-square, London, W., on March 17th, at 5 P.M.

The following is an additional case relieved at the last meeting:—

Widow, aged 63, of M.B. The husband died in 1895 at the age of 28 when he was a medical missionary. Since the death of her husband the applicant by her own industry and efforts as a hospital nurse in England and Australia, as a matron in a school in Canada, and finally as a secretary to a society in England has maintained herself. Ill-health has now forced her to resign and to give up all active work; she has an income of only £60. The Fund voted £26.

Cheques should be forwarded to the hon. treasurer of the Fund, 11, Chandos-street, Cavendish-square, London, W1.

Motorists' Hospital Circles.

Last year the number of motor accident patients treated at Burnley Victoria Hospital increased so considerably that a "motorists' circle" was started to raise money to meet the cost of dealing with such cases. Motorists were asked to become members by subscribing 2s. 6d. per annum; in return they receive a disc to be affixed to the car. So far the response has been unsatisfactory. A similar scheme has now been adopted by Salford Royal Hospital, which is in one of the busiest thoroughfares in Lancashire. Injured motorists keep an average of eight beds in continuous occupation at a cost of over £1100 a year, of which only £124 was repaid in 1930. Here, also, the response has been relatively small.

Manchester Hospitals.

It had been hoped that means would be available fo rebuilding the Manchester Northern Hospital for Wome and Children as a general hospital on a scale of 200 be and cots at a cost of £150,000. The amount subscribed however, only slightly exceeds £80,000, and it has ther fore been decided to erect a smaller building on a site i Cheetham Hill-road given by the late Sir Edwin Holt, former President. The projected new building will co over £90,000, and there will be room for expansion. Th existing hospital is officially stated to be "altogether o of date," and the accommodation is strained almost t breaking point.—Severe pressure is also being experience by the Manchester and Salford Hospital for Skin Diseases and the annual report states that it is only with great diff culty that patients can be treated efficiently. Last yea 11,521 patients were treated; the congested out-patient department remains as it was a quarter of a century ag but annual subscriptions have fallen off and money fo enlargements is not available.

Mental After-Care Association.

The annual meeting of this association will be held at 3 P.M. on March 25th at the Haberdashers' Hall, Gresham-street, London, E.C. Lord Wakefield will preside, and among the speakers will be Sir Hubert Bond, Dr. Walter Carr, Dr. T. Saxty Good, and Dr. Nathan Raw. The *secretary's address is Church House, Westminster, S.W.1.*

King's College Hospital.

The accounts for 1930 show that the income was £9000 less than in 1929, that the expenditure exceeded the income by more than £13,000, and that the total debt is £65,400. At the annual court of governors Lord Gorell, the chairman, stated that the hospital was kept going by the large sums paid by patients. An effort is to be made this year to raise £27,500 to complete the nurses' home.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1. Wimpole-street, W.

Monday, March 23rd.—*8 P.M., ODONTOLOGY. Demonstration*: Dr. David Imrie: Radiographs for Prosthetic and Orthodontic Work. Cases: Dr. E. W. Fish: Multiple Dental Cyst. Mr. Percival P. Cole: Cancer of the Mouth Treated by Radium with Inter-oral Apparatus. Other cases will be shown.

TUESDAY.—5 P.M., MEDICINE. Discussion: The Value of Liver in Treatment. Openers: Dr. Janet Vaughan, Dr. S. C. Dyke, and Dr. J. F. Wilkinson. Other speakers will take part.

WEDNESDAY.—2.30 P.M., UROLOGY. At St. Paul's Hospital, 24, Endell-street, London, W.C.2. Prof. A. von Lichtenberg will demonstrate an operation on the kidney. Owing to the limited accommodation, admission to the operating theatre will be by card to be obtained from Mr. H. P. Winsbury-White, F.R.C.S., at 51, Harley-street, W. 5 P.M., COMPARATIVE MEDICINE, EPIDEMIOLOGY AND STATE MEDICINE. Discussion: Milk-borne Streptococcus Epidemics. Openers: Dr. W. G. Savage, Dr. F. C. Minett, and Mr. A. W. Stableforth. Followed by Dr. E. Wilkinson, Mr. J. W. Brittlebank, and others.

THURSDAY.—5.30 P.M., UROLOGY. Paper: Prof. A. von Lichtenberg (Berlin): The Principles and New Advances in Excretion Urography.

FRIDAY.—5 P.M., DISEASE IN CHILDREN (Cases at 4.30 P.M.). 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Paper: Mr. A. F. MacCallan: Trachoma: Its Importance as a World-wide Disease.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

Monday, March 23rd.—*8.30 P.M., Discussion on Growth* in Children, Clinical, Radiological, and Histological, to be introduced by Dr. H. A. Harris, followed by Dr. H. H. Mills.

MEDICO-LEGAL SOCIETY.

THURSDAY, March 26th.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Mr. F. L. Collins: Mortality Tables: Their History, Construction and Use, to be followed by a discussion.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL *DISEASES, 11, Chandos-street, Cavendish-square, W.*

FRIDAY, March 27th.—8.30 P.M., Demonstration of Various Flocculation Tests for Syphilis will be given by Dr. T. E. Osmond and Dr. L. W. Cann. Introductory remarks by Col. L. W. Harrison. A discussion will follow.

TUBERCULOSIS ASSOCIATION.

THURSDAY, March 26th to SATURDAY.—(At Dunn Laboratory, Oxford). Annual meeting, addresses, and discussions.

ST. *JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.*

WEDNESDAY, March 25th.—4.15 P.M. (at St. John's Hospital, 49, Leicester-square, W.C.), Clinical Cases. Dr. Dore will read a paper entitled Infectivity and Auto-dissemination of Certain Skin Diseases.

EUGENICS SOCIETY.

TUESDAY, March 24th.—5.30 P.M. (at the Rooms of the Linnean Society, Burlington House, W.), Mr. W. Palin Elderton: Heredity and Insurance.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, March 23rd.—5 P.M., Mr. Reginald T. Payne: Pathological Specimens Relating to Diseases of the Gall-bladder and Extra-heptic Biliary Passages.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, March 24th.—5 P.M., Sir William Willcox: Toxic Jaundice (Second Lumleian Lecture).

THURSDAY.—5 P.M., Sir William Willcox (Last Lumleian Lecture).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 23rd, to SATURDAY, March 28th.—KING'S COLLEGE HOSPITAL, Denmark-hill, S.E. Wed., Free demonstration by Mr. V. E. Negus: Nose and Throat Cases. At 3 P.M.—ST. JOHN'S HOSPITAL, Morden-hill, Lewisham, S.E. Thur., Free demonstration by Dr. John Gibbens: Pulmonary Tuberculosis in Childhood with Cases. At 2.30 P.M.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Special Course in Dermatology. Every afternoon and evening.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology occupying mornings and afternoons.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Lectures illustrated by cases at 5 P.M daily.—Further particulars from the Fellowship of Medicine.

ROYAL INSTITUTION, 21, Albemarle-street, W.

TUESDAY, March 24th.—5.15 P.M., Mr. C. D. Darlington: Cytological Theory of Heredity.

THURSDAY.—5.15 P.M., Prof. J. B. S. Haldane: Respiration.

FRIDAY.—9 P.M., Lord Rutherford: Helium and its Properties.

SATURDAY.—3 P.M., Lord Rutherford: Alpha-Rays.

NORTH-EAST LONDON POST-GRADUATE COLLEGE. Prince of Wales's General Hospital, Tottenham, N.

MONDAY, March 23rd.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye *Clinics. Operations.*

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear, and Children's Diseases Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical and Surgical Clinics. Operations.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, March 23rd.—10 A.M., Gynæcological Ward, Genito-Urinary Operations. Skin Department. 11 A.M., Surgical Ward Visit. 2 P.M., Surgical Ward Visits. Operations. Medical, Surgical, Eye, and Gynæcological Out-patients.

TUESDAY.—9.30 A.M., Operations. 10 A.M., Medical Ward Visit, Dental Department. 11 A.M., Throat Operations. 11.30 A.M., Surgical Demonstration. 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

WEDNESDAY.—10 A.M., Medical Ward Visit, Children's Medical Out-patients. 2 P.M., Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal *Diseases Demonstrated.*

THURSDAY.—10 A.M., Neurological Department. 11.30 A.M., Fracture Demonstration. 2 P.M., Medical, Surgical, Genito-Urinary, and Eye Out-patients. 2.30 P.M., Operations.

FRIDAY.—10 A.M., Medical Ward Visit, Dental Department, Skin Department. 12 noon, Medical Lecture. 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

SATURDAY.—9 A.M., Throat Operations. 10 A.M., Medical Ward Visit, Children's Medical Out-patients. Surgical Out-patients.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, March 23rd.—12 noon, Dr. Greenfield: Pathology of Cerebral Tumours. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Mr. Leslie Paton: Vestibular Control of Ocular Movements.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Visual Disturbances in Nervous Diseases.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Cerebral Tumours.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Carmichael: Nervous Symptoms Associated with Blood Diseases.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Agar-street, W.C.

SUNDAY, March 22nd.—10.30 A.M., Mr. Norman C. Lake. Surgical Questions and Answers. 11.45 A.M., Dr. A. B. Rosher: Laboratory Tests as an Aid to the Diagnosis of Pyrexia of Unknown Origin.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL, University-street, W.C.

TUESDAY, March 24th.—5.15 P.M., Dr. C. H. Andrewes: Immunity in Virus Diseases.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

WEDNESDAY, March 25th.—4 P.M., Mr. Sidney Boyd: Clinical Demonstration.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, March 24th.—5 P.M., Dr. H. MacCormac: Malignant Growths of the Skin.

THURSDAY.—5 P.M., Dr. W. N. Goldsmith: Benign Growths of the Skin.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C

THURSDAY, March 26th.—5 P.M., Mr. R. C. Brown: The Significance of Albuminuria.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 27th.—4 P.M., Mr. Archer Ryland: Œsophagoscopy.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida-Vale, W.

THURSDAY, March 26th.— 3 P.M., Dr. Anthony Feiling: Clinical Demonstration.

nurse to do one year's work on anatomy and physiology, and one year in a domestic economy school. Finally, Miss Edmondson said, she wished to put the case for amalgamated training; by means of a wider system of affiliations it should be possible for a nurse to take a complete training, not only in medicine, surgery, gynæcology, and sick children's nursing, but in mental and fever nursing, in skins, venereal diseases, eyes, ear, nose, and throat, and in midwifery. Properly arranged such a course could be taken in five years instead of nine, which, as the curriculum stood at present, was the period required to cover nursing training in all its branches. More graduate nurses should be employed in hospitals so that student nurses could profit to the full by their training. Nurses about to take their final examination should be freed from other duties and allowed to work in any departments they wished for the last few weeks. Practical work was more valuable than any lectures, and at the present time the nurse was asked to assimilate far too much theory. She did not think the eight-hour shift advisable; in few hospitals was the working week now allowed to exceed 52 hours.

A HOSPITAL PHARMACOPŒIA.

THE new edition of the Pharmacopœia of St. Thomas's Hospital is a veritable *multum in parvo* of pharmacy. Fully three-quarters of the book are occupied by notes and memoranda on the 1914 British Pharmacopœia, offering a most succinct compendium of the essential and practical features of official materia medica. The conscientious perusal of these notes will lighten the burden and enlighten the understanding of every St. Thomas's student and resident. A résumé of poisons and antidotes, a synopsis of the Dangerous Drugs Regulations, and some eminently practical conversion tables are to be found at the end of the book. The hospital pharmacopœia proper covers 47 pages, interspersed with ruled leaves convenient for notes. Urgency alone has led to the issue of a fresh edition so near the dawn of a new B.P., which may render it obsolete. Opinions differ on the propriety of issuing pharmacopœias of this kind reflecting local tastes and prejudices. In the past they have crystallised a remarkable body of bed-side experience. The prime usefulness of this little book now lies in the fact that it provides, under imposing titles in impeccable Latin, a wide field of elegant and practical recipes and prescriptions, ranging from baths, poultices, and mixtures to the specialities of the eye and skin departments of a general hospital. These will form models in prescribing for the young practitioner. In one or two points improvement is possible. Greater attention might be paid to group headings: one passes, for instance, without warning, from guttæ pro aur. to black draught and a vaginal injection (pp. 9–10), and under solutions for local anæsthesia one finds a chemical food and syrup (p. 31). A number of mixtures are obviously redundant, and the list of endocrine tablets needs adapting to pharmacopœial authority. We question the wisdom of dispensing adrenalin in a stock solution with novocain (p. 31), especially before sterilisation; moreover, 2 per cent. iodine in methylated spirit (p. 26) is economical, but can be very irritating to the operator's eyes. We have only found one misprint in the whole book, which is a monument to the compiler's diligence. It is well bound and convenient for the pocket.

PEPTIC ULCER AND CAYENNE PEPPER.

ULCERS of the upper part of the digestive tract are generally regarded as rare among black people, but Dr. Stuart Bergsma, of Addis Ababa,[1] states that gastric and duodenal ulcers are relatively common in Abyssinia, although acute appendicitis is rare. Until about six years ago there was not a single surgical hospital in the country, and only during the last *four years has any considerable amount of* operating been done. During that time, however, Dr. Bergsma has been much impressed with the high proportion of patients whose complaint is stomach trouble of several years' duration. The treatment is of necessity surgical, for as soon as the patient leaves hospital he ceases to take his medicine and returns to the native diet of sour bread, raw meat, and peppery sauce. All patients except one were men, but this may be due to the difficulty of obtaining the consent of husbands for the admission of the women to hospital for operation.

Although Addis Ababa has 5000 white inhabitants there has not been a single case of ulcer among them, but acute appendicitis is not rare. There is, therefore, some reason for thinking that the high preponderance of ulcers among the natives is related to their habit of life. Dr. Bergsma dismisses their heavy infection with the beef tapeworm and helminth parasites, for these affect chiefly the lower part of the bowel, and also the high incidence of syphilis, for this applies also to the negroes of America. He turns therefore to the diet. The sour bread is made in the form of an immense thin pancake, part of which is broken off, rolled into a cornucopia and dipped into a sauce that is approximately half cayenne pepper. This is washed down, almost without mastication, with copious draughts of honey water. The babies are weaned at the age of about 2 years, and from that age the diet consists monotonously of these constituents with occasional beans, peas, and meat. *Hence* Dr. Bergsma leans to the corrosive theory of the pathogenesis of gastric ulcer. It would be interesting to hear the experience of surgeons in other parts of the world where a highly irritating diet is taken.

GRIFFIN'S YEAR BOOK.

We are glad that the Year Book of Scientific an Learned Societies, which has been issued for nearl half a century by Messrs. Charles Griffin and Co. Ltd., is not to be discontinued. The appeal for mor general support made in our own columns and i the scientific press generally has had its effect, an the forty-seventh issue now before us maintains it familiar size and form. Suggestions have, however been made that the year book might find greate support in an abridged and less expensive form, it present price being 18 shillings. The publishe therefore proposes to eliminate from future issue the alphabetical lists of papers read at the societie during the current year, but to retain all othe information that has been given hitherto. We ma remind our readers that the year book contains record of the objects of scientific and learned societie in Great Britain and Ireland, along with the cond tions of membership, the times of holding meeting and the names of the principal officers. The ye book is classified under 14 headings beginning wit general science and ending with medicine, to whic at present about 45 pages are allotted. The info mation is well arranged and not available in th form elsewhere. The volume is therefore a usef one for reference, and should be on the shelves every public library.

YORK WORKPEOPLE'S HOSPITAL FUND.—Last yea was the thirtieth since the foundation of this fund, and the end of 1929 the total raised from the beginning w £92,402. It was determined to endeavour to raise the tot to £100,000 by the end of 1930. The effort succeeded well that the sum raised exceeded the mark by £300.

BRISTOL GENERAL HOSPITAL.—Miss Hilda Wil last week opened a new out-patient department, whi has cost £35,000, at Bristol General Hospital. Th accommodation includes a waiting hall with seats f 400 people, and a canteen. Last year the hospit dealt with 157,952 out-patients, an increase of 70 over 1929. The ordinary expenditure exceeded th ordinary income by £10,840, but by crediting the sum received from free legacies the deficit was reduced to £962 The hospital's debt now amounts to £21,000, which it hoped to clear off before it celebrates its centenary next yea

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[1] Arch. Int. Med., January, 1931, p. 144.

ADDRESSES AND ORIGINAL ARTICLES

SOME LESSONS OF THE DISTRIBUTION OF INFECTIOUS DISEASES IN THE ROYAL NAVY.*

BY SHELDON F. DUDLEY, O.B.E., M.D., M.R.C.P.LOND., D.P.H., D.T.M.,

SURGEON CAPTAIN, ROYAL NAVY; PROFESSOR OF HYGIENE AT THE ROYAL NAVAL MEDICAL COLLEGE, GREENWICH.

LECTURE III.

THE HISTORY OF UNDULANT FEVER IN THE ROYAL NAVY.

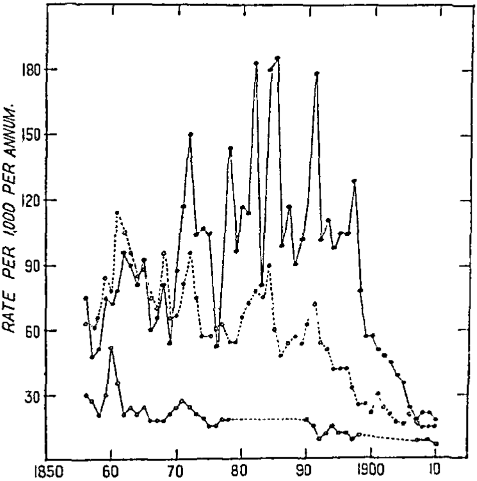
IN recent years in various parts of the world undulant fever has become more common. Therefore a re-examination of the naval records of "fever" in the Mediterranean should have a special interest at the present time. An old naval health report, written in 1837, contains the following eulogy on Malta:—

> Malta on account of its central situation, its arsenals and the excellence of its harbours is the principal Naval Station. *During nine months of the year the temperature is moderate*, the weather being generally clear and fine, which, with the excellence of fresh meats and vegetables procured there, produces highly beneficial effects on the health, comfort, and efficiency of the naval force employed in the Mediterranean. The other three months are hot, sometimes in high degree; but either because it is not sufficiently long continued or because there is not morbific material for it to act on, the heat has not, except on very rare occasions, proved injurious to health.

Contrast this description with an opinion written in the report for 1883, when the fever-rate had risen to 181 per 1000, more than twice as high as that recorded in the 'thirties (84 per 1000):—

> "The causes of this considerable increase in the amount of paroxysmal fever are various; chiefly it appears due to a combination of causes at Malta. The ships, in which the largest number of cases occurred, refer nearly all their sickness to that harbour—which is about the most unhealthy place on this station and where we spend most of our time."

FIG. 13.



Illness in the Mediterranean Fleet. Top continuous line and dots = total fevers; interrupted line and circles = rheumatism; lower continuous line = major infections of the lung.

It is obvious that something must have happened in the *interval to account* for two such diametrically opposed views on the salubrity of the island.

Perusal of the naval record for the early 'thirties fails to reveal a description of any disease that can be recognised as undulant fever. When the naval record *reopens in 1856 the incidence of fever is lower* than in the 'thirties, and the significant remark is made that, "the proportion of attacks of all kinds of fever—namely, 76 per 1000 of mean force—differs but little from the average rate in the Mediterranean Fleet for a long series of years."

For the seven years 1830 to 1837 the ratio per 1000 for fever on the Mediterranean Station was 81·0, with a case-fatality of 2·1 per cent. As a check that the tendency to contract fever under naval living conditions had undergone little alteration between 1837 and 1856 the West Indian statistics can be used. On this station the fever morbidity between 1830 and 1837 averaged 209·6 per 1000 per annum with a case-fatality of 5·3 per cent. Between 1856 and 1860 the corresponding figures were 223 per 1000 and 10·0 per cent. The high fatalities are due to yellow fever in the West Indies.

Therefore, prior to 1856 the incidence of undulant fever in the Navy cannot have been as great as it subsequently became.

Fig. 13 gives the incidence graphs of "total fevers," and two conditions which are sometimes confused with undulant fever—namely, "major" diseases of the lungs and rheumatism. The majority of infections due to *Brucella melitensis* are included in the upper graph, but a certain number, which must have varied at different periods, were diagnosed as phthisis, inflammation of the lungs, or rheumatism. The incidence of fever as recorded by the upper continuous lines in Fig. 13 remained relatively low till the 'seventies, and then rose; *there were further* great exacerbations of fever morbidity in the 'eighties. Mediterranean fever was not entered under a separate heading until 1897. This year coincides *with a rapid fall in* total fever incidence which continued, but at a slower rate, to the end of the period. The number of entries recorded as Mediterranean fever were halved between 1897 and 1900, and then remained level till the discovery of the usual means of transmission of brucella infection led to the prohibition of goat's milk. The incidence then fell practically to zero and remained there. Notice how the peaks on the graph representing the incidence of rheumatism frequently coincide with the peaks on the fever graph. The very first years that these graphs refer to are by far the most interesting. The excess of fever in 1856 over the next two years was caused by a single epidemic in H.M.S. *Hannibal.* In 1859 *the fever and* list may have been readmissions of the same individuals. The rheumatism in the *Exmouth* puzzled the naval medical officers of the time, who also report that these cases were generally subacute, but very intractable, and that many had to be invalided home.

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* The Milroy lectures delivered *before* the Royal College of Physicians of London on Feb. 26th, and March 3rd and 5th.

PULMONARY SYMPTOMS.

There are no descriptions of "fever" that can with certainty be recognised as brucella infection in the 1860 report. The *St. Jean D'Acre*, as previously mentioned, returned the maximum number of remittent fever cases, but in addition she suffered from an astonishing epidemic of pulmonary disease. During the 26 months she was on the station, 416 of her crew, averaging 880 men, were diagnosed as cases of "phthisis" or "inflammation of the lungs." H.M.S. *Cressy* suffered from the same peculiar disease to a less degree. This is what the report of 1861 says of this outbreak :—

> "It thus appears that seven vessels lost more than double the number of men by invaliding for phthisis in 1860 than in 1861, though the disease which appeared to be peculiar to the *St. Jean D'Acre* and *Cressy* did not exist in epidemic form in any other vessel; why the loss in other vessels was so large was shown in last year's report to be due to the disease attacking men sent to Malta Naval Hospital for treatment for other complaints; in fact so many men were attacked in this establishment, one of the most perfect in the naval service that, as previously mentioned, there were just grounds for believing the disease which first developed in the *St. Jean D'Acre* had acquired the power of propagating itself in the well-ventilated wards of the hospital."

Of 285 cases which were recorded in 1860 in this ship, 102 were definitely diagnosed "phthisis" and 117 "cachexia pulmonis"; 112 of these were invalided home but only six died. The low fatality (3 per cent.) excludes these cases being attributed to infection by *Bacillus tuberculosis* or *Streptococcus pneumoniæ*. (Tubercle of the lungs was a fatal disease at this time. In the two years 1856 and 1857, before this strange disease appeared, 54 cases of phthisis were reported from the whole Mediterranean Fleet, and 26, nearly half, died.) Moreover, it is expressly stated the peculiar thing about this epidemic phthisis in the *St. Jean D'Acre* and *Cressy* was that the cases quickly recovered on their return to England—a characteristic of the pulmonary complications of Malta fever seen in more recent years.

Spread of Infection.

There is further evidence that this disease was spread in the ship, for place, climate, and food-supply may be said to have been controlled by H.M.S. *London* (810 men), sister ship to the *St. Jean D'Acre*, who kept company with her nearly the whole three years this epidemic was in progress. The *London* recorded 54 pulmonary cases during these three years, 12 of which were diagnosed "phthisis." The epidemic was attributed to bad ventilation between decks. The following is a description of the lower deck in the *St. Jean D'Acre* as written in 1860 :—

> "All the ship's company amounting to about 930 men, with the exception of the cooks and about 40 boys, slept on this deck. The hammock hooks were placed ordinarily at only 14 inches apart—less than the average breadth of the men's shoulders; consequently, while in harbour when no watch was required at night, and all hands had turned in, they formed a compact mass close beneath the beams, the only air available for respiration being above them, that beneath the hammocks being almost entirely shut out from the space above. All the ports as well as the small round scuttles were kept closed at night; the small square central scuttles were, however, ordered to be kept open, though on account of the cold wind which came through them they were frequently closed by the men who slept next to them. The hatches were covered with gratings, but sometimes the open spaces in the gratings were accidentally obstructed with lumber. The only means of admitting fresh air were three windsails leading down to the cockpit, which it was difficult to keep properly trimmed, and in calm weather they, of course, were entirely useless."

It is further stated that the temperature of the air above the hammocks was sometimes 12° F. higher than the temperature below them.

POSSIBILITY OF DROPLET INFECTION.

Although the conditions in the *St. Jean D'Acre* could have differed little from those in other ships of the period, they were ideal for the development of an epidemic of pulmonary disease once the infection had gained a sufficient start. And it would seem that in this environment *Br. melitensis* had acquired the power of spreading by droplet infection. The power once acquired, this unusual form of pneumonic undulant fever became temporarily able to spread by droplet infection in the relatively spacious wards of the Malta Naval Hospital. If this hypothesis is true, this pulmonary form of brucella infection presents an analogy to pneumonic plague. In the overcrowded Manchurian inns, an atmospheric environment which is not unlike the lower deck of the *St. Jean D'Acre*, *Pasteurella pestis* acquires the power of spreading by droplet infection instead of through the skin. Moreover, in the common pneumonic complications, either *secondary* to plague inoculated by fleas or *secondary* to undulant fever contracted from infected milk, the respiratory spray of the patients seems relatively non-infectious, as compared with the droplet-infected *primary* pneumonic infections. Broncho-pneumonia and signs in the lungs are a common complication of ordinary Mediterranean fever and can simulate phthisis with remarkable accuracy. For a physician of the present day I have a fair clinical and bacteriological experience of Mediterranean fever yet, within the last year or so, I was completely deceived by a pulmonary case of undulant fever.

> A boy, a typical red-headed tuberculous-looking Irish recruit, who had never been further from Donegal than Portsmouth, was admitted to my care with hectic temperature, lymphocytosis, night sweats, and signs in his lungs which suggested tuberculosis. I was so anxious about him that I sent for his parents from Ireland and gave them a hopeless prognosis. To my astonishment the fever subsided, the boy seemed almost well, when another wave of fever started. The temperature chart took on a familiar appearance, and it was obviously time to test his blood serum which, diluted over 1000 times, agglutinated a suspension of *Br. melitensis*. The boy had another wave of fever and made an uninterrupted recovery.

The source of this boy's infection is only speculative. But brucella infections have occasionally been seen in the naval hospitals in men who had never been out of England, and the most probable source of such infections are urinary carriers returned from the Mediterranean. In the light of this experience I do not think there need be much hesitation in accepting this epidemic of phthisis and pneumonia of the 'sixties as one of pulmonary undulant fever, even if one does not care to believe the mode of transmission was "droplet infection." Nevertheless, the possibility of droplet infection is not to be lightly dismissed. Although the bacteriological investigation of the sputum of suitable cases has been rather neglected, yet *Br. melitensis* is reported to have been recovered "in almost pure culture" from the sputum of patients resembling clinical phthisis which were seen in an epidemic of undulant fever at Naples.[13]

The eradication of undulant fever from the fighting services by the prohibition of goat's milk has fostered a false conception that other methods of transmission are negligible, though Bassett-Smith [14] always insisted on the importance of other sources of infection, and drew attention to the danger and frequency of the mild ambulant case and urinary carrier of *Br. melitensis.* It almost looks as if epidemiologists had been mesmerised by the success of the great Maltese experiment, since it is only recently that field investigators are awakening to the fact that bovine and porcine varieties of undulant fever are as frequently contracted from other sources as from milk. The authors of one of the many recent papers on this subject which describes the epidemic of undulant fever in Iowa, U.S.A., conclude by saying :—

> "The data presented make untenable the opinion that the ingestion of raw dairy products from infected cows is the only means of transmission of undulant fever. It is apparent in Iowa, at least, that approximately one-half the cases result from a second means of transmission—namely, through contact with infected animals, their tissues and discharges, the infection in all probability entering through the skin." [15]

Clinical and Parasitic Types.

The evidence in these early naval reports suggests that undulant fever was then generally a sporadic disease in the Navy which was contracted ashore most probably from the consumption of raw dairy products. Usually it did not spread to other men on board, but, if conditions were favourable, brucella was transmitted from man to man via food, droplet infection, or even directly through the skin. Once the reservoir of infection on board was large enough a protracted epidemic affecting half a ship's company could materialise. Though extensive single-ship epidemics may have been relatively infrequent, when they did occur they caused a great increase in the naval morbidity which is reflected in the magnitude and irregularity of the yearly oscillation on the chart of total fevers in the Mediterranean (see Fig. 13). The ban on goat's milk prevented the infection being transplanted from the shore to ships where the environment was suitable for direct transmission. Fig. 14 gives examples of such brucella-infected ships, but it also shows another interesting phenomenon. There seemed in these early years to have been three clinical varieties of brucella infections, the first tending to produce a febrile, the second a rheumatic, and the third a pulmonary clinical picture. On this hypothesis the *Hannibal* suffered from the first type only ; in the *Royal Albert* the brucella strains were developing rheumatic-producing properties, while in the *Conqueror* they became "pneumogenic." These clinical types reach the acme of development in the *St. Jean D'Acre* and the *Exmouth ;* the former being infected about equally with the febrile and pneumonic varieties, while the *Exmouth* specialised in the former to the exclusion of the other two. The *Cressy* is remarkable as a ship where the ordinary type of fever was practically absent, having been replaced by the pulmonary, and to a less extent by the rheumatic types of brucella infection. Notice, moreover, how Fig. 14 envisages the striking way these clinical varieties bred true from year to year in the same ship.

A parallel to these clinical pictures of brucella infection can sometimes be seen in influenza epidemics, where several ships *in one squadron* will each have its own "species" of illness. When such phenomena are observed ashore there is seldom any indication that the variation in a clinical picture is not wholly secondary to differences in herd-immunity or environment. In these ships any differences in these latter factors could scarcely have been significant. Therefore, if the epidemics in the *St. Jean D'Acre* and the *Exmouth* were both caused by *Br. melitensis,* it can be assumed with some confidence that the marked variation in the clinical pictures were secondary to differences in parasitic qualities. In those days the classification of disease was based on clinical grounds only and pathogenic bacteria had yet to be discovered ; hence brucella infection would naturally and rightly be classified according as arthritic, pulmonary, or febrile symptoms dominated the clinical picture. In the *Exmouth* the majority of cases of what would to-day have been called undulant fever probably had definite arthritis. It was therefore obviously more rational to classify them under rheumatic, rather than under remittent, fever. Similarly, many of the brucella infections in the *St. Jean D'Acre* may have had rheumatic symptoms in addition to pulmonary lesions. But, the latter being most in evidence, these cases were recorded correctly as "inflammation of the lungs," and, as a result, the reported incidence of rheumatism in this ship was not above the average.

In the 'fifties and early 'sixties the clinical thermometer was not in general use, and the characteristic temperature charts, common to all varieties of the Mediterranean type of undulant fever, was unknown. By 1872 the use of the thermometer was routine, and in this year there is a detailed account of the protracted nature of the "Mediterranean remittent." The surgeon of H.M.S. *Caledonia* describes a series of cases which averaged 90 days apiece on the sick list. This officer (Staff-Surgeon J. Cotton) is also the first to record the observation, frequently confirmed in later years, that Mediterranean fever in some ships showed a greater tendency to attack officers than ratings (20 per cent. of the *Caledonia's* officers got *"remittent fever" as against 3 per cent. of the* "lower deck"). The greater apparent susceptibility of officers was by no means a general rule. In the big single-ship epidemics previously discussed, such as those in the *St. Jean D'Acre,* it is specifically mentioned that the officers seemed immune. The cause of this reversal in the relative immunity of officers and men is explained by the two modes of transmission. When brucella was disseminating directly from man to man in such an environment as that of the *St. Jean D'Acre's* lower deck, the officers were protected in their separate cabins and more spacious quarters. Fresh milk was essentially a wardroom luxury; the men did not get milk on board, and probably rarely drank goat's milk ashore during the first half of our period. Hence, unless the infection was spreading directly in the ship, officers were more frequently infected with brucella than men.

It is an interesting speculation how far the comparative freedom of the Navy from undulant fever before the 'fifties, and the subsequent rise in morbidity through the 'seventies and 'eighties, was due to an increased use of raw dairy products by the sailor.

Incidence of Undulant Fever.

From 1862 until 1878 there was no ship epidemic comparable to those just described, but in this year two ships, while at Cyprus, returned 236 cases of remittent fever, 20 per cent. of which were stated to be of that type known as "Malta fever." Incidentally, it may noted that, prior to 1882, the fevers in the Mediterranean Fleet appear to have been as often contracted at the Eastern end of the station as at Malta. The coast of Syria is specifically mentioned as an endemic locality for "the remittent fever characteristic of the Mediterranean." There is no intention of suggesting by this remark that undulant fever had not been endemic in Malta from times of antiquity, but only that either the degree of endemicity was highly variable or, owing to their habits, seamen did not become so often infected before as after the early 'eighties. In the period covered by Marston's famous report[12] on Malta fevers there is no doubt undulant fever was common among the "shore-going" inhabitants of the island both British and native. Also some figures quoted in the report indicate that the incidence of total fevers was about three times as great in the Malta garrison as in the Mediterranean Fleet in the period 1856–59. However, Marston's description of his "ephemeral fever" cases is almost as good a drawing of the clinical picture of sandfly fever as his account of the "Mediterranean remittent" is of undulant fever. For obvious reasons sandfly fever in Malta has always been much more prevalent among soldiers than sailors. Therefore some part of the excess of fever morbidity in soldiers was undoubtedly due to sandfly fever. (In 1928 the military garrison of Malta recorded its maximum sandfly fever morbidity of 117 per 1000 in the same year as the Mediterranean Fleet reported 4·3 per 1000.) Undulant fever seems to have been increasing in the garrison during the 'fifties because Marston himself states he had the impression in 1859 that fevers on a whole had become more protracted. It is probable, therefore, that in spite of occasional extensive ship epidemics and the prevalence of sandfly fever ashore swelling the total fever morbidity of soldiers, the Army in the 'fifties did suffer more severely than the Navy from undulant fever.

In 1882 there was a great exacerbation of enteric fever and undulant fever in the Fleet. The former was partly secondary to military operations in Egypt (27 deaths and 71 invalidings are attributed to enteric fever in 1882). The increase in Mediterranean fever, however, was due to two ship epidemics which together account for 42 per cent. of the total "remittent fever" morbidity. One of these ships, H.M.S. *Superb*, produced 136 cases, 77 of which were invalided home and one died, typical undulant fever figures. Her medical officer gives some interesting information concerning the spacial distribution of these fever cases in the ship.

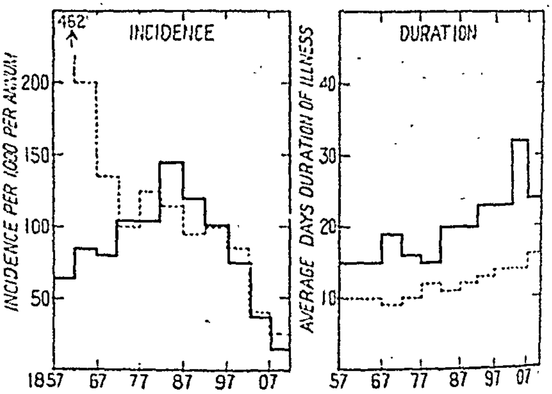
> The ratings in the *Superb* slept on three decks. The flying deck was a kind of huge shelf cutting part of the lower deck horizontally in two, it was the worst ventilated sleeping space with the lowest cubic space per man. Twenty-nine per cent. of the men (140) sleeping on the flying deck got fever as against 17 per cent. of the men (198) on the lower deck, and 10 per cent. of those (250) who slept on the relatively spacious and better ventilated battery deck.

This correlation of morbidity with density of population and deficiency of ventilation is again more consistent with a droplet-borne than a milk-borne infection. Ventilation greatly improved in the 'eighties, and "remittent fever," though as prevalent as ever, appears to have been more evenly distributed throughout the Fleet, but the statistical returns after 1878 no longer tabulate the incidence of specific diseases in separate ships. The big peak in 1891 on the graph of total fevers (Fig. 13), which is also accompanied by a large rise in the rheumatic morbidity, was apparently caused by a single epidemic of undulant fever in H.M.S. *Trafalgar*, who returned 268 cases of "fever" about which no details are given. There is little else of interest to note in the naval reports until the dramatic experiment of 1906, whereby the order prohibiting the use of goat's milk, eradicated undulant fever from the Imperial Forces, leaving the civilian incidence of Malta fever unaffected to control the experiment. And thus Malta was changed, from being a dreaded fever centre, back once more to the pleasant naval health resort which the island was reported to be in 1837.

A COMPARISON WITH CHINA.

An attempt will now be made to get some idea of the incidence of undulant fever in the earlier part of our period by examining the statistical data of the fevers in the Mediterranean Fleet between 1857 and 1913. It is as well to first compare the Mediterranean with another fever-producing station. Fig. 15 compares in five-yearly periods the morbidity and mean duration of illness from fever on the China and Mediterranean stations. The period opens with the Chinese wars. As is usual when the Navy goes ashore there was a tremendous incidence of fever in the China squadron. In the Mediterranean the incidence rises till the 'eighties with the development of undulant fever. The great fall in fevers which took place on both stations in the 1902–06 quinquennium coincides with the elucidation of the mode of transmission of malaria and the increased proportion of large ships in the Fleet. It is noteworthy that this fall in malaria took place prior to the control of Malta fever, so that the fall corresponds to the great rise in the mean duration of total Mediterranean fevers between 1902 and 1907 (B. Fig. 15). The mean duration of fevers on both stations tends to increase but the increase is greater in the Mediterranean, where the average duration of fever has always been longer than on the China station, owing to the presence of undulant fever, and to the greater ratio of enteric to other fevers, on the Mediterranean station. The higher relative prevalence of enteric is also confirmed by the fact that up till 1897 the case-fatality for total fevers was on the average twice as high in the Mediterranean as in the China squadron.

FIG. 15.



Incidence of total fevers (1857–1912). Continuous lines = Mediterranean; dotted lines = China station.

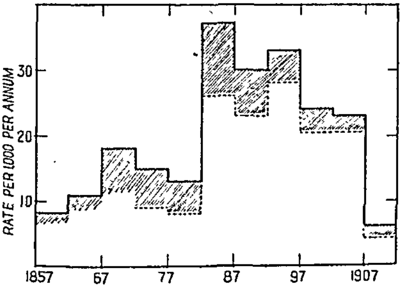
PREVALENCE IN THE MEDITERRANEAN.

Table IV. gives some details of the fevers on the Mediterranean station between 1897 when undulant fever was first given a separate heading in the naval returns until its control in 1906. The Table suggests one or two ways of getting a rough estimate of the incidence of undulant fever before 1897. Theoretically, if case-fatality was constant and enteric incidence known, one should be able to calculate the incidence of undulant fever, because these two fevers are responsible for almost all the mortality. But the case-fatality of undulant fever is too small and variable for this method to tell us much. On the other hand, owing to the constancy and magnitude of its case-fatality, mortality is a good guide to the prevalence of typical enteric fever. Table IV. suggests two other ways of obtaining a rough idea of the relative prevalence of undulant fever in the periods before it was given a separate name in the nosological returns. Practically all invaliding from "fever" was caused either by undulant or enteric fevers. Therefore the incidence of total invaliding, less invaliding for enteric fever, will give the loss due to undulant fever which, if the standard for invaliding home had not greatly changed, should be about half the incidence. The second method of gauging the prevalence of Malta fever, which probably gives the best approximation to the truth, is by using the average duration of illness. Table IV. shows that it is possible to divide the "total fevers" into two classes—a "long" fever group of about 50 days' mean duration consisting of enteric and undulant fever only, and a "short" fever group of roughly 10 days' duration which comprises all other fevers. If it is assumed that the mean duration of the fevers in these groups did not vary significantly since 1857, then the incidence of "long fevers" during any *period can be approximately calculated from* the incidence and mean duration of total fevers in the same period. And if the incidence of enteric fever which has been recorded separately since 1872 is then subtracted from that of the "long" group, a rough approximation of the prevalence of undulant fever can be obtained.

TABLE IV.—*Fevers: Mediterranean Fleet.*

1897 to 1906. Fevers diagnosed as—	Cases.	Days sickness.	Died.	Invalided.	Average duration.	Case-fatality.	Per cent. invalided.
Undulant	3,100	147,830	51	1,718	48	1·7	55
Enteric	478	28,341	105	188	60	22	39
Malaria	955	12,398	1	33	13	—	—
Continued	3,655	31,343	2	27	8·5	—	—
Total fevers ..	8,188	219,912	159	1,966	27	1·9	24
Undulant and enteric (long) ..	3,578	176,171	156	1,906	49	4·4	53
Other fevers (short)	4,610	43,741	3	60	9·5	0·1	1·4

FIG. 16.

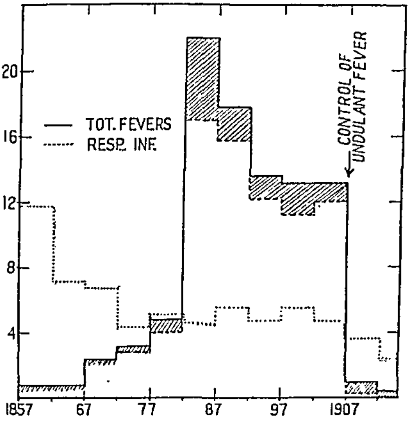


Incidence of "long" fevers (1857–1912), assuming that total fevers contain two groups averaging 10 and 50 days' duration. Shaded areas = enteric fever, as recorded; white areas = rough estimate of undulant fever.

For example, take the figures in Table IV. There are 8188 total fevers with a mean duration of 27 days each. Call the duration of "long" and "short" fevers 50 and 10 days respectively, and let x be the number of long, and y the number of short fevers. Then $x+y=8188$, and $50x+10y=27\times 8188$; whence $x=3500$ cases of "long" fever.

Fig. 16 is a diagram of the long fever incidence calculated in this way. The shaded area in the polygon represents the fraction of long fevers due to the recorded enteric morbidity.

FIG. 17.



Invaliding from Mediterranean (1857–1912). Shaded portion of continuous polygon represents enteric invalids; the remainder may be taken as undulant fever invalids.

In the first three periods enteric morbidity was not distinguished separately in the returns. However, because the recorded morbidity of the total fevers and the average estimated incidence of "long" fevers were both less, and because the total case-fatality was about the same in these three earliest periods as in the succeeding one, therefore the proportion of enteric infections among the long fevers of 1857 to 1872 can hardly have been less than in the period 1872 to 1877.

Therefore the unshaded area of the polygon is the incidence of undulant fever, as suggested by the mean duration of total fevers. The diagram shows the same sudden rise in the incidence of undulant fever as was seen to take place in that of total fevers (see Fig. 13). According to this estimate the incidence of undulant fever was trebled between 1862 and 1882. This inference is confirmed by a similar graph made from the invaliding returns. Fig. 17 is this graph. The fraction of invaliding caused by enteric fever has been shaded, and therefore the unshaded portion represents Malta fever invalids. The general shape of this diagram is striking in its similarity to the preceding one (Fig. 16), but makes the sudden rise in the incidence of long fevers in 1882 even greater. According to Fig. 17, if the proportion of cases invalided was the same before and after 1882, then there would have been a fourfold increase in the prevalence of undulant fever. It is more than probable that the increase which the invaliding rates suggest was exaggerated by a rather sudden realisation that the best treatment for Malta fever was to send the patient home. It must be remembered that in those days the victim of a brucella infection was sent to hospital where his staple diet generally consisted of cultures of the infecting organism in goat's milk. This form of vaccine treatment does not seem to have been successful and may have originated the dictum that Malta fever could not be cured in the island, though to-day cases of undulant fever do quite well in Malta Naval Hospital. On the other hand, as is shown by the graph of invalidings for respiratory disease, there was no hesitation in sending a man home in the 'sixties and 'seventies if his condition indicated it to be desirable; and I believe another factor in the magnitude of this sudden rise in Malta fever invaliding is that, prior to 1882, cases did more often get well in Malta hospital because the milk was not then so often or so intensely infected with *Br. melitensis*. Therefore the rise in the morbidity of undulant fever may not have been as great as the invaliding rate suggests. On the other hand, the rise in enteric invaliding is still greater and, since this is so, the rise in the total mortality from fever should also have been proportionately greater than that of total invaliding. As a matter of fact the fever mortality was only doubled in this period. Therefore part of the increase in invaliding from undulant fever might have been secondary to more frequent contamination of the hospital milk with *Br. melitensis*. The same hypothesis probably also explains the increased percentage of enteric fever cases that were sent home after 1882. Such cases arrived in hospital infected with *B. typhosum*, but many left infected with *Br. melitensis*. A platitude which was commonly used in the Mediterranean Fleet prior to 1906 was the remark that—if you went to hospital with a broken leg you were bound to go home with Malta fever. In this connexion, and as a remarkable instance of Marston's clinical acumen, in 1859 he advised against the use of goat's milk as a routine diet for Malta fever cases, since he had noticed such patients did not do well on it.

The Egyptian war of 1882 was responsible for an influx of emigrants into Malta from the Eastern Mediterranean, and some writers of the time attributed the coincident rise in fever to the overcrowding of the island which resulted. The naval records suggest that either new strains of *Brucella* had been introduced into the island about this time or the reservoir of the existent infections had become enlarged.

Fig. 17 also shows a dotted graph of the incidence of invaliding for "phthisis and inflammation of the lungs." The high rate in the first period was caused by the epidemics, previously described in the *St. Jean D'Acre* and *Cressy*, but invaliding for pulmonary disease remained high for the next decennium, suggesting that the pulmonary type of brucella infection was more common throughout the 'sixties than subsequently. It is noteworthy there was no rise in the invaliding for pulmonary disease corresponding to the great rise in fever invaliding in 1882, which indicates that the pneumonic type of brucella infection was becoming relatively more infrequent.

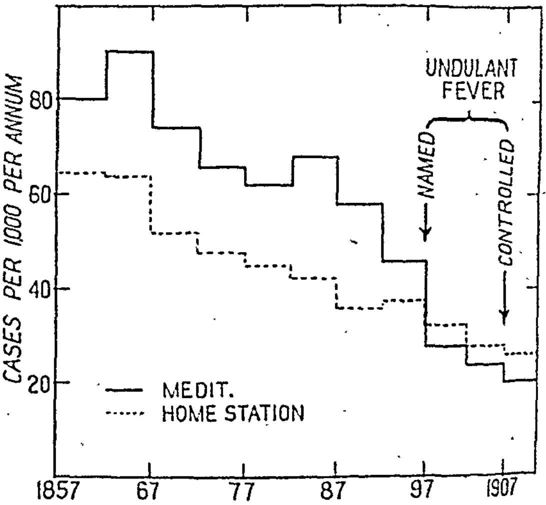
The eradication of Malta fever in 1906 is followed by a drop in the invaliding rate for respiratory disease which indicates that a certain number of brucella infections, right up to 1907, were still recorded as phthisis.

The Rheumatic Complications.

When the yearly incidence in the Mediterranean (Fig. 13) of the total fevers and rheumatism were plotted out together it was seen how the peaks on the two graphs frequently synchronised. If a certain fraction of this rheumatic incidence was due to brucella infection, it would be expected that the excess of rheumatic incidence would be proportional to the morbidity of undulant fever. However, ordinary rheumatism was becoming rapidly less prevalent all through the period (Fig. 9). In order to get a rough idea of the expected incidence of rheumatism, irrespective of brucella infections, the figures for the Home Station were superimposed on a graph of those for the Mediterranean Fleet (Fig. 18).

The dotted graph of the Home Station falls in a constant slope from 64 to 26 per 1000. The former figure is approximately the same as that for the Mediterranean in the 'thirties, and in 1856 and 1857. In five-yearly periods, the Mediterranean rate remains about 20 per 1000 in excess of the Home rate until 1892. There is a special exacerbation of rheumatism in the period 1882 to 1887, which corresponds to the sudden rise in undulant fever during this time. This rise is much less, however, than would have been expected if the excess of rheumatism had remained proportional to the incidence of undulant fever as estimated in the two diagrams (Figs. 16 and 17). In 1892 the incidence of rheumatic disease declines faster in the Mediterranean than at Home, and from 1897 onwards there is relatively less rheumatism recorded on the former station than from the Home Station. The acceleration in the decline of rheumatism started 15 years before the control of undulant fever. And, during this period, the recorded incidence of total rheumatism declined faster than undulant fever.

FIG. 18.



Incidence of rheumatism in the Mediterranean and on the Home Station (1857–1912).

The excess of rheumatism in the Mediterranean was attributable to two sets of cases. First, acute undulant fever mistakenly diagnosed as rheumatic fever, and second, the sequelæ of recognised Malta fever infections which were re-entered on the sick list as "rheumatism." Improvement of, or fashion in, diagnosis might tend to diminish the number of cases recorded in the first group but would not affect the second. Therefore the disappearance of the excess of rheumatism from the Mediterranean Station, which anticipated the abolition of undulant fever, could have been caused by a falling off in the proportion of brucella infections which were accompanied or followed by rheumatic symptoms.

In my own clinical experience of undulant fever I have always been puzzled by the stress older practitioners laid on the pain and arthritis, and the difficulty in controlling it. Some of these physicians have stated that in spite of the protracted nature of the illness, they were often compelled to resort to morphia. I have never prescribed morphia for a patient with undulant fever, and have been surprised at their general freedom from pain. On the average the patients I have seen complained of less discomfort than the ordinary case of influenza. In the report of undulant fever in Iowa[16] due to the *abortus* or *suis* varieties of brucella the authors say—"In many cases the physician was much impressed by the patients' lack of pain, . . . we have encountered no case in which this diagnosis (i.e., rheumatic fever) had been considered. The striking absence of any physical abnormality of the joints probably explains this." These authors admit, however, "there may be real difficulty in the differential diagnosis of brucella infection and pulmonary tuberculosis." The bovine and porcine types of undulant fever seem otherwise no less protracted and severe than the caprine type as seen in the Navy. The average duration of the illness of 300 patients in Iowa was 90 days, about twice the mean duration of the brucella infections diagnosed in the Mediterranean Fleet. However, owing to the unfamiliarity of local physicians with brucella infections and the wide dispersal of the cases, the majority of mild infections of short duration must have been missed in Iowa. This would not happen in naval practice in the Mediterranean where every case of fever comes under observation and every medical officer is on the look-out for undulant fever.

It might be inferred that owing to some unknown factor common to all diseases, such, for example, as the improved dietary of the Navy, the tendency of specific infections to get rheumatic complications had diminished in parallel with the mysterious decline of ordinary rheumatism. This may be so with some infections, and perchance with brucella infections. This hypothetical common factor is, however, not at work on all rheumatic complications.

In the case of the rheumatic complications of gonorrhœa, as judged by the invaliding rates, there has been no amelioration in the Navy of the rheumatism-producing tendencies of the gonococcus, which are greater now than 30 or 40 years ago, in spite of the alleged improvement in the treatment of gonorrhœa. Most invaliding for gonorrhœa is due to rheumatism. (From 1887–96, 1·0 per cent. of gonorrhœa cases were invalided, from 1904–13, 0·8 per cent., and 1923–27, 1·8.)

So as far the evidence goes the decline in the rheumatic complications of brucella infections is more likely attributable to changes in the characters of the parasitic than of the host or the external environment.

Conclusion.

The lesson taught by these naval reports is that undulant fever was relatively uncommon in the Navy before the late 'fifties, from which time its importance as a naval disease slowly increased until 1882 when the incidence suddenly must have become at least doubled. Though it is probable that in early days undulant fever was first introduced into the ships by men who had drunk infected goat's milk ashore, much infection was transmitted directly from man to man without the intermediary of the goat. Just as I maintain that there would have been an adequate description of Malta fever by naval surgeons long before 1860 if it had been common in ships, Theobald Smith[17] points out that the great recrudescence if not first appearance of the *Br. abortus* type of undulant fever about 1922 in the United States cannot be explained by the disease having totally escaped the notice of the American physicians. Yet, since *Br. abortus* has been known to be frequently present in cow's milk since 1897, something must have happened to increase its pathogenicity for man between that date and 1922. Either these brucella infections in cattle were derived from imported caprine strains or the bovine variety had increased its infectivity for man by passage through the pig or the goat. The condition of affairs in Porto Rico to-day, reported by Otero,[18] is consistent with some such hypothesis. An exhaustive search failed to establish any definite human case of undulant fever in a country with an exceptionally high infection-rate of *Br. abortus* in cattle. Moreover, in Porto Rico experiments on 40 volunteers indicated that the strains of *Br. melitensis* var. *abortus* which were used were practically non-pathogenic to man except in colossal doses (seven broth cultures via the mouth—less, via the broken skin). I think the most generally accepted view to-day is that the "*brucellæ*" are one interchangeable species, the characters determining the varieties known as *melitensis*, *paramelitensis*, *suis*, and *abortus*, being impressed on the organism by the species of host which they have been recently inhabiting; and one wonders if the striking difference in the clinical picture of brucella infection in the Navy of the 'fifties and 'sixties as compared with the present century was not due to the more frequent passage of *Br. melitensis* from man to man without the intermediary of another animal—in fact, the attempt of an occasional parasite of man, which had wandered out of its specific host, the goat, to adapt itself to a purely human environment.

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THE COMPARATIVE ASPECT OF GROWTH IN CHILDREN.*

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GROWTH in the true sense of the word includes more than mere change in size and form. It includes that gradual development from the ovum to old age which involves the acquirement of new functions and fresh responses to the environment by the unfolding of new patterns of behaviour. The mere morphogenetic aspect of growth of the older anatomists is inadequate, and room must be found for concepts which are on the one hand physiological and psychological, on the other physico-chemical. Our real interest in children is not determined by their anatomy, but by their changing activity and behaviour as they pass from one developmental stage to another. The gardener's autumn starts with the wilting of the first snowdrop. The death of the individual starts with the shedding of the first ectodermal cell in the developing ovum.

So vast yet autonomous a process as growth in the child cannot be solved by anatomical studies of form any more than by mass statistics of height and weight. Even embryology has failed, for we are still circumscribed by the myth that each stage in the development of the human babe is a survival of an ancestral adult form. Psychologists and social anthropologists alike have abused Karl v. Baer's theory of biological recapitulation, and see in man a tiger red of claw, a barnyard cockerel, or a free swimming dog fish—stages which *Homo sapiens* has no time for.

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* A paper read at the Medical Society of London on March 23rd.

It is unfortunate that the facilities afforded by a school medical service have been so largely devoted to that aspect of growth which has hitherto proved most unfruitful. Mass statistics of body-weight, height, sitting height, and cranial diameters have proved to be as barren as mere descriptive anatomy. The value of a piece of work is not commensurate with the number of measurements that it contains. In themselves the measurements may be as void of significance as mere anatomical descriptions. Significant figures and correlation factors may shed no light on causal morphogenesis, and may even have no significance in relation to the actual processes of growth.

The Growth Curve.

In a recent publication[1] I have summarised briefly the historical aspect of the problem of growth in the child, and analysed the typical growth curve in terms, on the one hand, of the three "*springing-up*" periods of babyhood, the second dentition, and puberty; on the other hand, of the three "filling out" periods, from 2 to 5, 8 to 12, and adolescence. The type of growth registered by this curve is far from being an adequate representation of the profound changes taking place in any given child, and deals purely with changes in height and weight. Practically every external lineal dimension of the body, with the exception of the head and neck, fits into this type of growth. The skeleton as a whole, the length of the limbs, the growth of the thoracic cage and respiratory mechanism, and the muscle system as a whole present this general type of skeletal growth.

Scammon[2] has emphasised the departures from the general or skeletal type of growth. The brain, the eyeball, and the skull display a peculiar type of growth. From birth to 18 months these organs grow with extreme rapidity; by two years they have reached 60 per cent. of their adult size, and by 7 years of age almost adult size. This type of growth may be regarded as *neural*, and applies to the brain, spinal cord, eyeball, and skull, exclusive of the face.

The lymphoid tissue of the body, as illustrated by the lymphatic glands, tonsils, and thymus grows rapidly in childhood, and continues to grow at a somewhat slower rate to puberty. During adolescence and adult life there is both an absolute and a relative decrease in the amount of lymphoid tissue. In view of the extent to which lymphatic glands are involved in children at all ages, both as a result of acute disease and of chronic infections, this third *lymphoid* type of growth must be of deep significance.

The fourth type of growth is that presented by the *genital organs*. These organs grow but slowly in infancy, are almost stationary from 2 to 10, and grow rapidly in the two years before puberty, during puberty, and during adolescence.

Even these four types of growth, general or skeletal, nervous, lymphoid, and genital are but crude representations of the complexity of the processes involved. Dentition is not completed until about the twenty-first year with the cutting of the "wisdom" teeth. Growth in the face and neck continues to the same age. The suprarenal glands, the paired organs which lie in relation to the kidneys, lose one half of their weight in the first two weeks of postnatal life, remain stationary until the fifth year, and do not reach birth weight again until puberty. The uterus, which grows rapidly in the last month of antenatal life, loses weight in the first two weeks of postnatal life, and does not commence to grow appreciably until two or three years before the onset of menstruation.

The ductless glands, which have provided so many astounding experimental observations and so much feeble theorising, present a picture which defies analysis. The thyroid glands display steady growth from birth to maturity, with the tendency to enlargement in relation to puberty and pregnancy as a characteristic. The thymus follows the lymphoid type of growth. The pineal follows the nervous type, and the pituitary follows the thyroid. There is thus no trace of correlation in the growth pattern of the ductless glands.

It should be mentioned that the second springing-up period of growth, from 5 to 7 years, is not so clearly shown on some of the growth curves of height and weight as it is made manifest to the careful observer of the child. The cutting of the second dentition, often accompanied by nervous disturbances as significant as those of the first dentition, the marked lengthening of the face, the rapid development of the air sinuses in the face, and even the rapid lengthening of the foot in the sixth year, necessitating a larger size in footwear, the anxiety of the parents because the child is "going thin," the loss of subcutaneous fat—these are more evident to the careful observer than the statistics declare.

As soon as an attempt is made to analyse the growth processes it is seen that no scheme is adequate. The systems and organs have a changing pattern. The individual parts of any system, the various tissues of any organ, the constituent cells themselves, and the intracellular substance in turn present a most complex pattern of growth. Cell division, mitosis, chromosomes, genes—the concept is awe-inspiring. The tissues of the growing animal change in chemical composition from day to day. Each animal is a new biological experiment in growth.

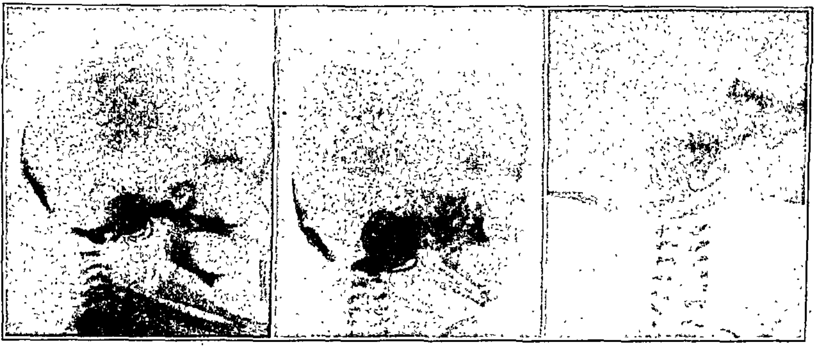
PRECOCITY *v.* SLOWNESS OF GROWTH.

We have already noted the remarkable precocity of the nervous system in the child, a precocity whereby the brain and eye in particular reach almost adult size before the complete shedding of the milk dentition. This precocity is still more marked in the case of the organ of hearing and equilibration. In 1926 I showed a series of radiograms of the human fœtus in which it was seen that the tympanic membrane, internal ear, and semicircular canals became surrounded by bone during the nineteenth to the twenty-second week of fœtal life, in such manner that no further appreciable increase in size took place (Fig. 1). The rapid development of the muscular system in the fœtus, and the myelinisation of the vestibulospinal tract both occur at that time when the mother first becomes aware of the subjective symptom of quickening. At this time the tympanic membrane and internal ear have already reached adult size.

In contradistinction to this precocity of development of the internal ear, man is characterised essentially by a slowness of growth which is reflected in the long period of gestation, helplessness at birth, and postponement to a late date of puberty, sexual activity, and the completion of the second dentition by cutting of the wisdom tooth. No animal takes so long to grow as man, and this slowness of growth is associated with the high standard of his final attainments. If we examine the growth curve of any domestic animal, such as the dog, one is struck by the absence of springing-up and filling-out periods. The dog passes from puppyhood through the first dentition, second dentition, and puberty within the space of 12 months. The curve of growth has not been broken up into alternating periods of slow and rapid growth, and the young animal scampers through its childhood.

There is much to be said for dismissing the catastrophic event called birth from its position as the starting-point in life. In all animal forms it is necessary to study the growth curve from the fertilisation of the ovum to adult life as one sequence. The rat is born blind, hairless, and helpless, after 22 days' gestation at a stage of skeletal development and ossification (Fig. 2) corresponding to that of a human embryo of the fourth month (Fig. 3). The guinea-pig is born in such an advanced stage that it is able to fend for itself. The skeletal development and ossification pattern (Fig. 4) is that of a 7-year-old child. Thus of two rodents, the one is born prematurely and spends a long period of childhood in postnatal development, the other is born post-maturely and has wasted its childhood in the amniotic sac, free from external stimuli, and is in a sense born too late to learn much from its delayed postnatal environment. The one acquires new behaviour patterns and is educable; the other is born so late that it acquires anew but few behaviour patterns, and is relatively uneducable. The rabbit and leveret, the bear and calf, the dog and pig, afford similar contrasts, as in the realm of birds do the silly goose and learned jackdaw. The pup and kitten are born in a stage of skeletal development and ossification corresponding to that of a human fœtus of the seventh month. If the pup grew slowly after birth instead of rushing through primary and secondary dentition to sexual maturity at one year it might look forward to a greater measure of educability and increased intellectual attainment.

FIG. 1.



Three radiograms of the human fœtal skull indicating the rapidity of ossification in the tympanic ring and semi-circular canals after attainment of adult size. (A) 20 weeks; (B) 22 weeks; (C) 28 weeks.

The relationship of the pattern of skeletal development at birth to the growth of the brain has been considered elsewhere.[3] There is a remarkably close parallel between the two, and this is shown clearly in the radiogram of the new-born guinea-pig, which not only presents the ossification pattern of a child of 7 years, but also has a brain almost as large as an adult guinea-pig, in much the same way as the brain of the 7-year-old child is almost equal to that of an adult.

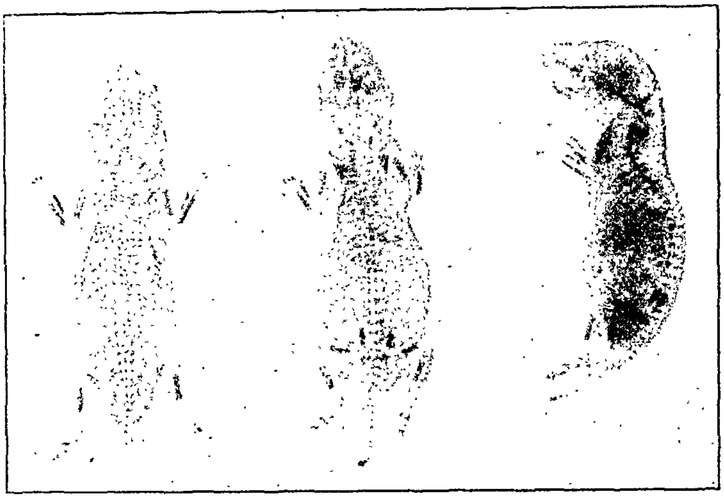
The actual stage of development and the degree of ossification in the new-born rat and guinea-pig explains why the maternal rat is depleted of blood calcium during lactation, but not during pregnancy; the maternal guinea-pig, with her "grown up" young in the womb, is robbed of calcium during pregnancy to a far greater extent than during lactation. Radiographic examination of the new-born is thus able to explain many of the apparent incongruities which appeared in the various reports of analyses of the blood calcium in pregnant and lactating animals.

Dramatic examples of alterations in the rate of developmental growth and in the time on the growth curve at which birth occurs are known to the breeder of animals. Thus the new-born bear weighs about 1 lb., although the mother may weigh up to half a ton. In the case of the marsupials the young are born in an incredibly immature condition. For instance, Hartman[4] has shown that the American opossum has a gestation period of 13 days, of which the first seven and a half is devoted to carrying the fertilised ovum forward to the stage of the primitive streak, with commencement of formation of the notochord and medullary groove. In the next five and a half days the ovum grows miraculously from a minute flat disc to a viable embryo with precocious fore limbs and claws adapted for crawling into the pouch, but the hind limbs are mere paddles. Not until the young have grown from the birth weight of 0·13 g. to about 12 g. at the fiftieth day (about the size of a mouse) do the eyes open. At the other extreme of the mammals we have the bat, where the weight of the single fœtus may be as much as one-third of the maternal weight. The ossification pattern of the animal at birth, as aged on the human scale, is of significance not only to the anatomist but also to the pathologist. Thus the guinea-pig at birth is already too old to acquire perversions of growth such as rickets or those devastating gastro-intestinal and respiratory infections which take such a heavy toll of the young which are born in a helpless condition.

HORMONES.

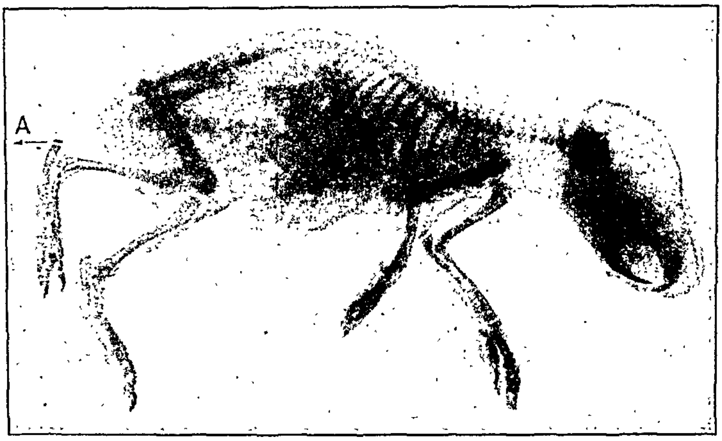
The above examples indicate the complexity of growth from the mere morphological point of view with regard to the skeletal development and activity of the new-born. It cannot be too strongly stressed that there is no philosopher's stone in biological research, and it is absurd to think that any one factor is responsible for so varied a pattern as we see not only from species to species but even from animal to animal within a species. The differences among themselves between domesticated breeds of cattle and pigeons are wider than those between related species in the wild. Of all the factors which have been studied in relation to growth the hormones have provided at one and the same time the most dramatic experimental results combined with the wildest theorising. In discussing the machinery of racial evolution, Sir Arthur Keith[5] says in relation to acromegaly: "In such cases we see a new physical type being produced under our eyes." That the anterior pituitary hormone is in no way responsible for the creation of new physical types is clearly indicated by innumerable experiments. The experimental work of H. M. Evans, Philip E. Smith, and others was largely performed by heterotopic transplants. The anterior pituitary of the ox transplanted into the immature female rat produces increased growth and premature ripening of the ovarian follicles. The pituitary of a senile dog of 14 years produces the same effect when transplanted into the female immature rat. Thus the action of anterior pituitary is qualitative rather than quantitative, and is common to the growing mammal rather than specific to a given class. Ox pituitary will grow "rat" as well as "ox," but it does not grow a new type of rat.

FIG. 2.



Radiograms of new-born rats. The degree of ossification in the rat at birth is comparable to that in a human fœtus of the fourth month.

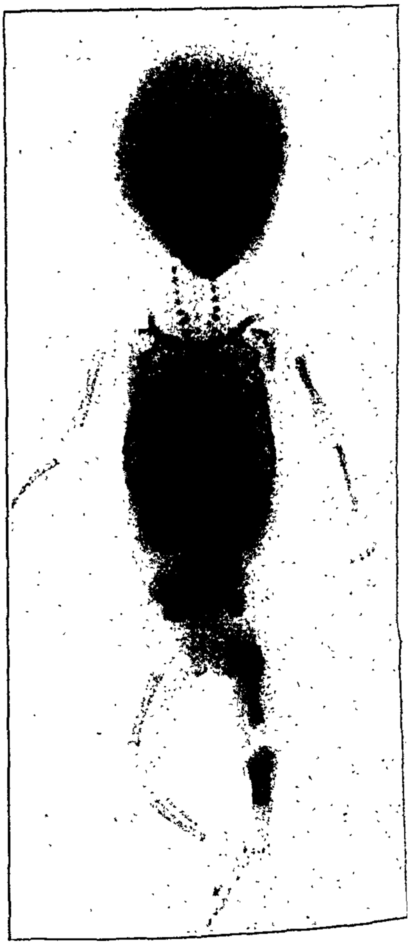
FIG. 4.



Radiogram of a new-born guinea-pig. Note the secondary centre of ossification in the os calcis which appears in the human at 7 years. A = secondary epiphysis of the os calcis.

In a large series of embryonic pigs Smith and Dortzbach[6] have been able to find active anterior pituitary hormones, as tested by transplantation into immature rats, only in embryos of more than 10 cm. in length. The hormone producing increased skeletal growth appears at the 10 cm. stage, and the hormone producing increased growth of the ovarian follicles at the 17 cm. stage. Thus during the first half of the period of gestation the growth of the pig embryo does not depend upon its own pituitary hormone. Either the growth up to this stage is entirely independent of the anterior pituitary hormone, or the pig placenta is permeable in the earliest stages to the maternal pituitary hormone.

FIG. 3.



Radiogram of the human fœtus of the fourteenth week.

Schwind[7] has shown that the anterior lobe of the pituitary in embryonic rats is not recognisable as a system of vascularised epithelioid cords until the fifteenth day of a gestation period of 22 days. It is clear, therefore, that growth in the embryo takes place in the absence of fœtal pituitary for 15 days. We do not know that the growth is due to permeation of the maternal pituitary hormone through the placenta. That the latter is possible is suggested by the evidence which is gradually accumulating in the reverse direction in favour of the protection of a diabetic mother by the insulin of the fœtus during the last three months of pregnancy. If placental permeation is possible, then the question arises as to whether the mother does protect her cretin in the uterus.

Two years ago Castle and Gregory,[8] studying the early stages of the developing ovum in large and small strain rabbits, suggested that the difference in size was fundamentally due to a difference in the rate of cell division. In the large strain of rabbits, the fertilised ovum has reached the 32-cell stage at 48 hours, whereas in the small strain of rabbits the fertilised ovum has only reached the 16-cell stage. *This conception of increased rate of cell division* as the determining factor in the size of the embryo denotes the possibility that size inheritance in rabbits is controlled by a mechanism independent of the endocrine glands. On the other hand, Gray has shown that more rapid rate of cell division in the developing eggs of trout, consequent upon increased temperature, leads to decreased size of the embryo on hatching. Newman has also shown that cross fertilisation of certain fishes leads to rapid rate of cell division in the embryo and diminutive size. Byerly,[9] *working with eggs of the same size from a pure strain* of Rhode Island Reds and White Leghorns, has shown that, notwithstanding the marked differences in size of the adult birds in this heavy and light strain, the differences in size during incubation are insignificant. Thus size inheritance in the bird is not due to differences in the rate of cell division.

VITAMINS.

A similar attempt to explain the complex processes of growth in terms of one or more pre-eminent factors is seen in the history of the vitamins. In turn fat-soluble vitamin A, fat-soluble vitamin D, and the water-soluble vitamin B have been regarded as "the growth-promoting vitamin." It is very unlikely that the complex processes of growth will be analysed in terms of any one vitamin or hormone. The broad biological conceptions which are emerging must be such as to account for those processes of growth which are common to the animal and vegetable world. In 1926 I put forward my views[10] on the rôle of the vitamins in relation to bone formation, and emphasised the need for clearly distinguishing between the processes of proliferation in cartilage, calcification in cartilage, and osteogenesis proper. Cartilage is a proliferative tissue with a matrix, devoid of blood-vessels, which is perfused by tissue juice for the nutrition of the cells. The proliferation of cartilage resembles that of bacteria, yeasts, vegetable cambium, and that of a gumma, tubercle, or an avascular tumour. Just as there is a limit to the size of a gumma or tubercle in man, so there is a limit to the size to which a colony of cartilage cells can grow. All growth of this type, mere proliferation, depends in particular both in the animal and vegetable world on a supply of water-soluble products, among which are the water-soluble vitamins such as vitamin B.

In the case of an epiphysial growth cartilage, the cells arrange themselves in columns, and when the limit of growth is reached by reason of the precarious mode of nutrition, the older cells become progressively senile, the matrix undergoes calcification, and the cells actually reach a stage of senescence bordering on *death*. This process of calcification in the matrix of a senescent colony of proliferative cells is seen not only in cartilage, but in proliferative tumours such as a gumma, tubercle, or fibroid. An analogous process in epithelial tumours leads to cell-nest formation and keratinisation. It is the same type of process which is seen in the conversion of a green stem into a woody stem in the ageing plant. This process of senescence in cartilage, accompanied by calcification of the matrix, occurs in the region of minimum nutritional potential, and is accelerated by vitamin D, ergosterol, or ultra-violet light. In the normal growing animal calcification of cartilage, and nothing but calcification, is controlled by vitamin D, sunshine, ultra-violet light *or ergosterol*. Thus the typical pattern seen in a normal epiphysial cartilage or costochondral junction is comparable to that seen in many forms of animal and plant life. It involves proliferation, senescence, and degeneration *with calcification of the matrix*.

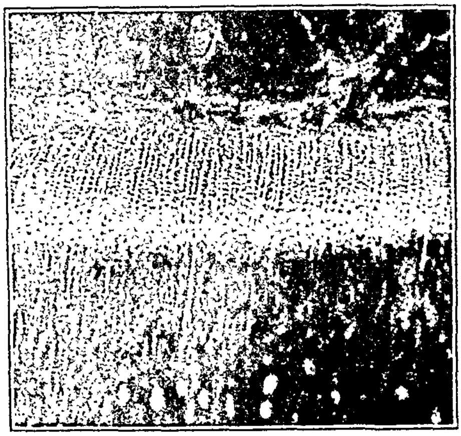
The mass of aged calcified cartilage, whether in the shaft of a long bone in the embryo, or in the epiphysis of the child, acts essentially as a foreign body and calls forth a mechanism which has much in common with aseptic inflammation. An eruption of blood-vessels occurs, and two highly vascular tissues, marrow and bone, replace the calcified cartilage. The process is comparable to that seen in the removal of any foreign body. The differentiation of pre-existing mesenchyme cells to form active *osteoblasts or marrow cells depends on the supply* of fat-soluble vitamin A. Vitamin A helps to replace an avascular proliferative tissue such as cartilage by a vascular tissue such as bone, fully differentiated for function at the expense of mere proliferation. If the supply of vitamin A is inadequate, the degree of differentiation of the osteoblast is limited, and ranges from that of an "osteoidoblast" to a minimum of differentiation in the fibroblast.

Rickets.

Rickets is a perversion of growth involving all three processes above described. The proliferation of cartilage is excessive, the calcification of the cartilage is defective, and the differentiation of true bone is imperfect. The three processes are in part dependent on water-soluble vitamin B, fat-soluble vitamin D, and fat-soluble vitamin A respectively. *The avoidance of rickets calls for a balance in all three* processes with a balanced supply of all three vitamins. The amounts of the vitamins necessary to guarantee normal growth depend to a considerable extent on the salt balance and degree of freshness of the food.

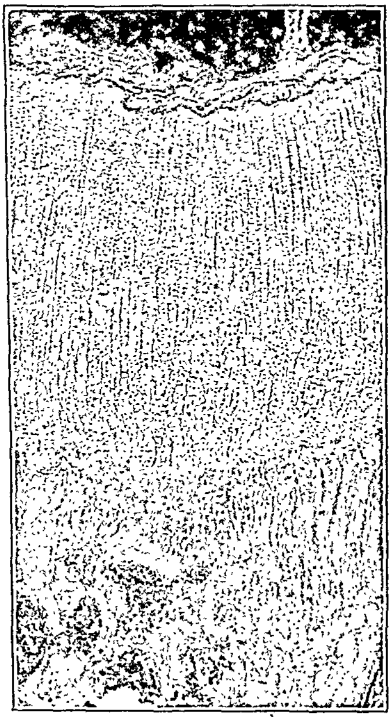
In the case of all animals it is necessary to know the range of variation in the appearance of the normal epiphysial cartilage. This can best be ascertained by counting the number of cells in the columns of proliferating cartilage, and counting the number of cells in the columns of calcified cartilage. The number of cells is virtually proportional to the rate of growth at a given epiphysis. It is maximal at the lower end of the femur, and minimal at the upper end of the radius and ulna. In order to indicate the method pursued in the study of growth a number of sections from the upper end of the tibia in rats will be described. The normal epiphysial cartilage (Fig. 5) shows cells in the cartilage zone, and cells in the zone of provisional calcification. Any increase or decrease in growth in the cartilage is immediately reflected in these zones, either in the positive or negative direction. Arrested growth is shown by a decrease in the number of cells in the cartilage columns, and marked increase in the calcification of the longitudinal and transverse portions of the matrix. It is this zone of increased calcification which is later replaced by dense bone, and is eventually represented in the diaphysis as a line of arrested growth. Increased growth of the cartilage zone with deficient calcification is seen in the epiphysial cartilage of a young rat presenting severe rickets (Fig. 6). In this case the number of cells in the cartilage column is five times the normal, and there is over-proliferation of the cartilage combined with failure of calcification in the matrix between the older generations of cartilage cells. This indicates clearly that the first two factors in rickets consist of an overgrowth in the cartilage zone with a failure in the senescent process in the zone of calcified cartilage.

FIG. 5.



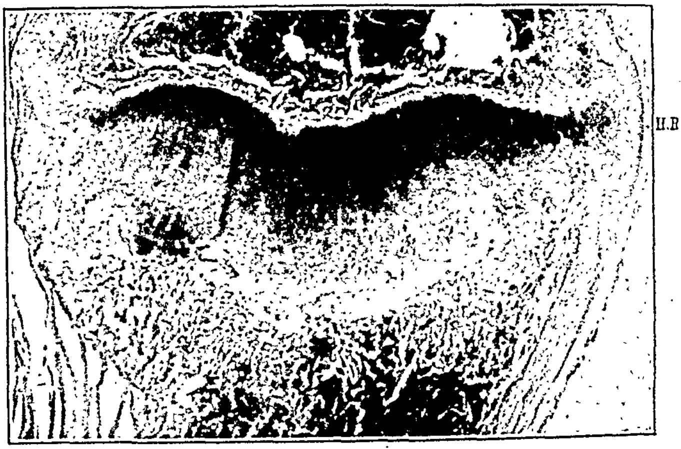
The growth cartilage at the upper end of the tibia in the rat to show the zone of cartilage, calcified cartilage, and bone.

FIG. 6.



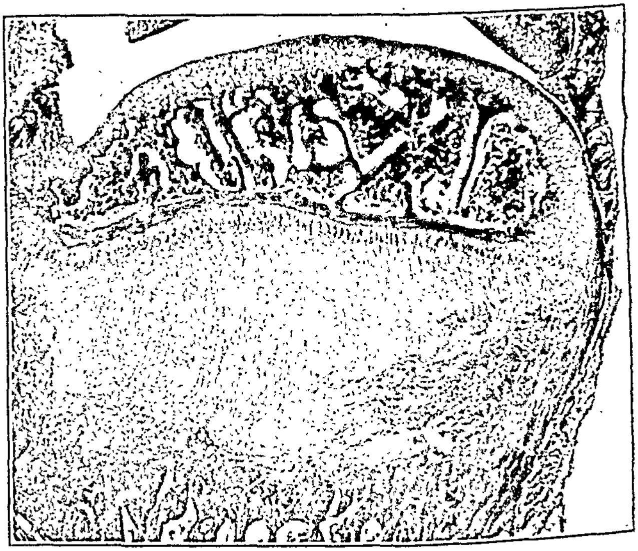
The growth cartilage at the upper end of the tibia in an extremely rachitic rat. Note the increased number of cells in the cartilage columns, defective calcification of cartilage, and osteoid tissue.

FIG. 7.



The growth cartilage at the upper end of the tibia in a rachitic rat. Healing of rickets induced by cod-liver oil. Note the heavy calcification in the rachitic cartilage which gives rise to the line of healing rickets on the radiogram (H.R.).

FIG. 8.



Rachitic rat submitted to a diet of water only. Note the irregular calcification in the redundant cartilage and the extension of bone formation from the diaphysis. There is no line of healing rickets.

If such a rachitic animal be given vitamin D, either in the most efficient and economic form of cod-liver oil, or in the more expensive form of ergosterol or in the least efficient form of ultra-violet light, then the balance of cartilage and calcified cartilage is restored to normal, and the calcium is deposited there where calcification would normally have been deposited if the animal were not rachitic (Fig. 7). This zone of suddenly precipitated calcium is the line of healing rickets which constitutes so valuable a test radiographically or histologically. The line of healing rickets is bounded by an epiphysial cartilage in which the cell count of the cartilage column has been reduced to normal. The line of *healing* rickets is not a line of *healed* rickets. The redundant cartilage has not only to be calcified but replaced by active bone and marrow. This process occurs only in the presence of an adequate supply of fat-soluble vitamin A. If the supply of vitamin D is inadequate the redundant cartilage is only calcified in part, many islands of cartilage cells escaping calcification and being carried into the shaft. The calcified cartilage is replaced by osteoid tissue or fibrous tissue or bone according to the amount of vitamin A available.

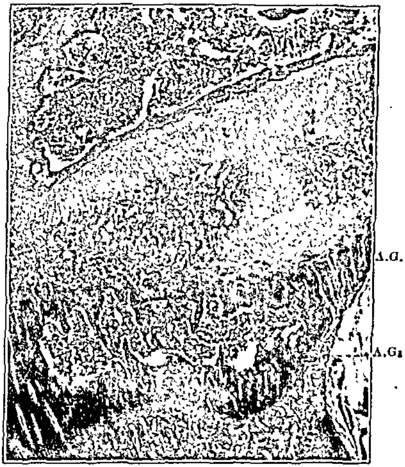
Thus vitamin D and vitamin A are not growth-promoting, but control calcification in cartilage and true osteogenesis respectively. If a rachitic animal be subjected to sudden prolonged starvation, without thirst, the changes occurring in the rachitic zone are quite distinct. Calcification occurs not at the locus of the line of healing rickets but in that portion of the redundant cartilage which adjoins the bony diaphysis. Such a rachitic rat, placed on a water diet (Fig. 8) shows scattered calcification in the cartilage and extension of bone formation from the shaft. The starving animal is quickly converted from a growing rachitic animal into a non-growing non-rachitic animal. If the starvation be continued the excess of cartilage is heavily calcified, and gives rise to a line of arrested-growth bordering the zone of the true epiphysial cartilage.

As an example of the extent to which the previous history of an animal can be registered in so sensitive a structure as bone a microscopic section (Fig. 9) is presented of a rat which was reared on a normal diet and then submitted at intervals to two periods of starvation. The two lines of arrested growth due to the starvation are seen as two dense bony zones. This animal was then fed on a rachitic diet as shown by the extreme proliferation of the cartilage zone. The animal was then placed on a diet of water, and the self-healing of the rickets is shown by the extension of ossification into the rachitic cartilage.

The Nervous System.

I have selected one or two aspects of my own experimental and clinical work to illustrate the complexity of the growth processes. When we turn to the nervous system we find a type of growth which is peculiarly baffling. The relation of form to function is more than usually disturbed, and there is as yet no complete survey of the postnatal changes in structure and function of the various parts of the brain. It is no longer held so tenaciously that the number of neurones in the brain at birth is not increased in early childhood, any more than that the definitive number of ova of the adult are present in the ovary at birth. It is no longer certain that myelinisation of the fibre tracts indicates definitely the onset of function. The brain of the young rabbit has no area in the motor cortex, stimulation of which leads to movement in the hind limb. At this early age stimulation of the posterior corpus quadrigeminum in the mid-brain produces movement of the hind limb. In the opossum, as in the rabbit, this transference of control of the hind limb from the mid-brain to the cerebral cortex can be followed. Such examples of telencephalisation, whereby functions controlled in lower forms and by the young of higher forms are transferred from lower centres upwards to the cerebral cortex, are but a startling manifestation of the complexity of the growth pattern in the mammal. In the gradual transference of visual centres from the mid-brain to the occipital cortex, this process has been recently traced by Elliot-Smith.[11] The principle of persistence of fœtalisation, whereby the human embryo and child tends to maintain the fœtal pattern without departing widely therefrom in such widely different organs as the hand, foot, and face, has been discussed by Bolk[12] and Elliot-Smith.[13] This maintenance of simplicity, without too great a departure from the fœtal pattern, has guaranteed to man that power of adaptability to a new environment which is so important a factor in evolution.

FIG. 9.



The growth cartilage at the upper end of the tibia in a rat which presents two bony lines of arrested growth (A.G.), rickets and self-healing of rickets by starvation.

INDIRECT APPROACHES.

The problems of growth are being attacked from many other directions. Bagg[14] has succeeded in rearing a strain of mice from mothers submitted to the action of X rays. This strain presents a large percentage of deformities of the limbs, eyes, and kidneys. The deformities of the limbs have been traced to the earliest forms in the embryos. The earliest defect in the embryo is associated with the formation of a blister-like blob, which raises the epithelium in a localised area. The extent of the lesion appears to determine whether the resulting condition shall be polydactyly, syndactyly, hypodactyly or congenital amputation. Selective breeding in a series of over 5000 animals has greatly increased the number of foot defects in the offspring. This experiment appears to be a decisive proof of the experimental alteration of the germ-plasm by X rays. On the other hand, the recent experiments of Miss Durham[15] on the progeny of alcoholic guinea-pigs has failed to produce any confirmation of the dire results which Stockard claimed to have attained.

Loeb[16] and his co-workers have attacked the problem of growth in a quantitative manner by measuring the proliferative activity of the epidermis in various animals in terms of the actual microscopic count of mitotic figures in the proliferating zone. The proliferative activity of the epithelium is lowered during the greater part of the sexual cycle and after castration, but increased during pregnancy. Malnutrition reduces the mitotic activity in the skin slowly but surely. Loeb has demonstrated clearly the complexity of the growth processes by proving that potassium iodide and thyroid gland which respectively depress and increase the activity of the cells of the thyroid acinus both have a depressant effect on the activity of the epidermis. Remarkable experiments on growth in vitro are being carried out in this country by Dr. Honor B. Fell and others at the Strangeways Laboratory. The views which I have expressed by surveying a limited portion of the field indicate the need for active liaison between workers in the different fields, if we are to prevent that jostling of medical science by quackery which Latham despaired of.

Acknowledgments.—I am indebted to Dr. Audrey Russell and Mr. F. Melville for invaluable assistance in the examination and radiography of animals; to Mr. A. K. Maxwell and Mr. F. J. Pittock for illustrations and microphotographs.

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SEPTICÆMIA TREATED WITH SCARLET FEVER ANTITOXIN.

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THE following cases of septicæmia occurring in children at the City Hospital, Little Bromwich, form an interesting group. Various cases have already been reported. One described by Hutinel[1] in 1911 followed scarlet fever and ended fatally. More recent cases have been reported by:—

(*a*) Roller,[2] whose case in an infant aged 16 months occurred after mastoidectomy and recovered as a result of treatment with polyvalent antistreptococcal serum, blood transfusions, and supporting measures such as saline injections, dextrose, and digitalis.

(*b*) Lord and Holmes,[3] whose case, a boy aged 14 years, also made a complete recovery after the administration of scarlet fever antitoxin.

(*c*) Rosher,[4] who has reported four cases of septicæmia, three in adults and one in a child—all recovering after treatment with scarlet fever antitoxin.

These last results are made the more striking by the fact that Roller[2] had collected 43 cases of general sepsis observed at the Children's Hospital, Los Angeles, of which ten were proved by blood culture to be due to a streptococcus and five more were found to be of streptococcal origin by blood cultures taken post mortem. Of these 43 patients, 40 died—a mortality of 93·1 per cent.—and of the 15 proved to be due to a streptococcus only the reported case which was treated with antistreptococcal serum recovered.

In each of the present series of seven cases, blood cultures were examined at the Birmingham City Laboratory. Six of these showed streptococci in the blood. In four of these no mention was made as to whether the streptococcus was hæmolytic; one was proved to be hæmolytic—this patient also having hæmolytic streptococci in the cerebro-spinal fluid—and one was stated to be non-hæmolytic. The seventh case gave a growth of *Staphylococcus albus* only on two occasions and, although all precautions were taken to avoid it, this was probably a skin contamination. All of these cases but one, which was mild in type compared with the others, received treatment with scarlet fever antitoxin with good results in five out of the six. Even in the case which ended fatally there appeared to be some response to serum, but this case was complicated by a streptococcal meningitis. Two of the cases (3 and 4) developed abscesses of the thigh at the site of injection of serum, and from both of these streptococci were recovered. These were in all probability in the nature of fixation abscesses. Two other cases (1 and 6) developed redness and localised swellings, one over the outer end of the clavicle and the other over the coccyx and great trochanter, which looked as though they would suppurate, but in both cases the swellings subsided without surgical interference.

Clinical Histories.

The following are brief résumés of the cases:—

CASE 1.—A male, aged 6 years, was admitted on July 28th, 1928, suffering from scarlet fever. The disease appeared mild at the onset and was not treated with serum. Towards the end of the fourth week he had albuminuria associated with increased pulse-rate and slight pyrexia. This was followed by a mild otitis media. Until this stage the child had not been desperately ill. On the forty-fourth day he became very much worse; the temperature rose to 104°; blood and albumin were both present in the urine; and general irritability, but no signs of meningitis were present. Blood taken for culture on this day showed streptococci (no mention was made of whether they were hæmolytic or otherwise), and 20 c.cm. of scarlet fever antitoxin were given intramuscularly on this day and repeated at three-day intervals—four doses, 70 c.cm. in all, being given. (The second dose was only 10 c.cm.) A typical septicæmic temperature was maintained for three weeks, the daily variations being 5° or more, during which time the albuminuria continued. During pyrexial periods the child became definitely worse, improving temporarily in the intervals. Only one rigor occurred. An intense serum œdema and rash occurred 12 days after the initial dose of serum. The tip of the spleen became palpable towards the end of the third week of pyrexia. At this time the daily remissions became smaller and by the end of another week the temperature was normal. As the temperature settled, a soft lump formed over the outer end of the right clavicle, but it soon subsided without suppuration. With the cessation of pyrexia, the albuminuria ceased and a marked general improvement took place. The patient was discharged quite well eight weeks after the onset of the septicæmia.

CASE 2.—A male, aged 3½ years, had been treated at home for scarlet fever and was admitted to hospital on July 27th, 1928, on the twenty-first day of the disease, when he was found to have a severe nephritis. Œdema of feet, legs, hands, sacrum, and face was present, together with an ascites and some œdema of the lungs and bronchitis. The urine contained blood and albumin. The heart sounds were soft, with an impure first sound at the apex and a systolic murmur at the base. The liver and spleen were palpable. Blood taken for culture the day after admission showed a copious growth of streptococci. The blood count showed a polymorphonuclear leucocytosis. The temperature, which was 101·4° on admission, remained up for two days, during which time his condition was unchanged. His temperature then fell and his nephritis became worse; packs were given to induce sweating, as the secretion of urine was only 11 oz. in 24 hours. After two days his temperature rose again, though the nephritis was now improving. At this stage 20 c.cm. of scarlet fever antitoxin were given intramuscularly. A systolic murmur had developed at the apex of the heart and the child was very ill. After four days of pyrexia, which varied between 100° and 102°, the temperature gradually fell to normal in three more days, after which a slow but gradual improvement continued. All œdema had subsided by the time the temperature reached normal. A week later the spleen was no longer palpable and the heart sounds had improved in quality. Four weeks later the blood culture showed no streptococci. The nephritis did not completely clear up for several weeks, but no other complications occurred except an alveolar abscess, which subsided after the removal of a tooth. The patient was discharged quite well four months after admission.

CASE 3.—A female, aged 2½ years, was admitted on Jan. 2nd, 1928, suffering from faucial diphtheria, from which she made a good recovery. During convalescence she developed typical scarlet fever which was treated with 10 c.cm. of scarlet fever antitoxin, intramuscularly, on the third day. Pyrexia up to 101° continued for two weeks, after which it settled. During the last few days of pyrexia she developed a double ear discharge, but there was no evidence of any acute mastoiditis. Three weeks later—i.e., five weeks after the onset of the scarlet fever—she had a second attack of scarlet fever with rash and peeling tongue; the temperature rose to 102·4° and thereafter the condition became one of septicæmia. Swinging pyrexia and rapid pulse were present, associated with a palpable spleen. Blood culture showed the presence of streptococci. On the ninth day she was desensitised and 20 c.cm. of scarlet fever antitoxin were given intramuscularly. Three days later a further 20 c.cm. were given (10 c.cm. intravenously and 10 c.cm. intramuscularly), followed by a further 10 c.cm. intramuscularly two days afterwards. The excursions in the temperature chart began to lessen after the first injection and the temperature became normal and remained so three days after the third injection. The ear discharge, which had continued since the first attack of scarlet fever, ceased after the second injection. With the cessation of pyrexia, her general condition improved but her convalescence was interrupted by the formation of a large abscess in the thigh at the site of the injection. This was opened and drained and streptococci were cultured from the pus. The wound healed well and her recovery was complete.

CASE 4.—A male, aged 2½ years, had a vague history of sore-throat and vomiting for three weeks previously, accompanied by rigors. He was then thought to have diphtheria, and antidiphtheritic serum was given into the anterior abdominal wall and he was admitted to hospital on Nov. 12th, 1929. On admission he was found to have slight pyrexia (99°) but no definite physical signs, and no membrane was present on the fauces. Thenceforward he had swinging pyrexia varying from 98·4° to 103°. The right side of the abdomen was tender, owing to the injection of antidiphtheritic serum given before admission, but there was no evidence of local infection of the abdominal wall. A firm superficial swelling, increasing in size, formed over the posterior end of the right iliac crest and to the right of the vertebræ, but there was no evidence of involvement of the hip-joint or spine. X ray examination showed no abnormality. He was drowsy, but when roused became irritable. A blood culture taken ten days after admission gave a copious growth of a non-hæmolytic streptococcus. Lumbar puncture revealed a clear sterile fluid under pressure.

Thirteen days after admission, during the whole of which time he had had swinging pyrexia, 30 c.cm. of scarlet fever antitoxin were given intramuscularly and a further dose of 20 c.cm. in 48 hours. A marked improvement followed; the temperature no longer showed a remittent character and became normal in 48 hours, remaining so except for rises, of 12 hours' duration only, two and 11 days later, associated with the formation of abscesses over the right sacro-iliac joint and in the thigh at the site of the serum injection. These were opened and drained and healed well. With the fall in temperature following the serum injections there was a general improvement in the child's condition. He was less irritable and started to take nourishment better. From then on he made good progress. Blood taken three weeks after the injection of serum was sterile. He was discharged well after a total stay in hospital of nine weeks.

CASE 5.—A female, aged 10 years, was admitted to hospital on Jan. 3rd, 1930, the twenty-third day after the onset of scarlet fever, for which she had been nursed at home. During the few days preceding admission she was said to have had pyrexia, pains in the head, and some delirium.

On admission she was bright and not complaining of any pain or discomfort; the temperature was 101°; she had a dry, coated tongue; the urine was scanty and contained a trace of albumin; and the bowels had not been opened for two days. The heart condition was satisfactory. There was discharge from the left ear with reddening of the postero-inferior quadrant of the drum and a small perforation, but no swelling or tenderness over the mastoid process. Five days later she showed meningeal signs and symptoms. She was restless and irritable with short periods of drowsiness; neck rigidity and Kernig's sign were present, and the pupils were dilated, but there was no squint. There was practically no ear discharge, but tenderness developed over the tip of the left mastoid, though no œdema was present. Lumbar puncture showed slightly turbid fluid under increased pressure, and streptococci were obtained on culture. The blood also contained hæmolytic streptococci. The patient was seen by Mr. Scott Mason—one of the visiting surgeons attached to the hospital—who decided to open the left mastoid. When exposed the cells were found to contain greenish pus and a small extradural abscess was present.

Owing to the extensive infection on the left side, accompanied by such paucity of symptoms, the right mastoid cells were opened and found to be similarly involved, but to a lesser extent, though there had been no symptoms or signs on that side at all. The wounds were left open to promote drainage. Scarlet fever antitoxin was given—30 c.cm. intramuscularly and 30 c.cm. intravenously. The next day the neck rigidity and Kernig's sign were unchanged; mentally the patient was bright but inclined to be peevish; the temperature remained up. By the next day she was very irritable, resisting all attempts to examine and feed her. A further 30 c.cm. of scarlet fever antitoxin were given intramuscularly; lumbar puncture was repeated and 30 c.cm. of greenish fluid under pressure was withdrawn, which gave her relief. By the next day she was unconscious and lying on her left side; rigidity of the limbs was more marked. Lumbar puncture was repeated daily. After 48 hours complete unconsciousness the coma was found to be less deep; she took 6 oz. of milk by mouth and responded when touched. A further 30 c.cm. of scarlet fever antitoxin were given intramuscularly. Each day during the next week the coma and rigidity became a little less marked. By the end of three days she appeared to be aware of the presence of people and could carry out simple orders, such as putting out her tongue, and by the end of the week could answer questions a little. Throughout this time lumbar punctures were repeated and further quantities of serum given: 60 c.cm. intramuscularly, 15 c.cm. intrathecally, and 15 c.cm. intravenously, amounting in all to 210 c.cm. from the commencement of serum treatment.

She remained at this stage for four days, but the improvement was only temporary. She became more drowsy although still taking food by mouth; the rigidity again increased; there was an extensor plantar response on the left side; the knee-jerks were present and the abdominal reflexes absent. She lay persistently on her left side, resenting movement and tending to vomit when turned. The next day she was more comatose. Lumbar puncture revealed a straw-coloured fluid—not under much pressure. Wasting became extreme and she stopped taking food by mouth, nasal feeding alone being used. Each day after this she became progressively worse, and she died 26 days after the onset of coma, during which time she regained partial consciousness for one week after six days' complete coma.

Post-mortem examination showed increased intracranial pressure, much bulging occurring when the vertex of the skull was removed. The base of the brain was covered with inspissated pus, especially round the medulla. The lateral ventricles were very dilated, little cerebral tissue remaining round them. When opened, large quantities of green pus flowed out.

Although the patient died from streptococcal septicæmia and meningitis, the case is remarkable in that she lived 29 days after streptococci had been recovered from the cerebro-spinal fluid. There appears to be little doubt that the scarlet fever antitoxin was an important factor in prolonging life, especially considering that definite clinical improvement followed some of these injections.

CASE 6.—A female, aged 13 years, was admitted on March 8th, 1930, suffering from a moderately sharp attack of scarlet fever which was treated with 20 c.cm. of scarlet fever antitoxin. The rash faded, but the temperature did not fall to normal as usual. Three days later an acute right otitis media with perforation of the drum and free otorrhœa occurred, accompanied by swinging pyrexia and rather intense frontal headache. The temperature became normal after 12 days' remittent pyrexia, remained normal for a week, and then rose again to 103° with morning remissions to 101°. Albuminuria occurred at this time. After four more days the temperature was again normal, but remained down for four days only, rising again to 105°. No complaints except that of frontal headache were made. The right otorrhoea continued, but there was no evidence of any extension to the mastoid cells or of any meningeal infection. The chest showed no abnormality. The heart sounds were pure and well heard, and the heart's action rapid but regular. The next morning a rigor occurred; 20 c.cm. of scarlet fever antitoxin were given intramuscularly and blood was taken for culture. For the next three days a typical septicæmic temperature occurred: morning temperatures were subnormal and evening temperatures were between 100° and 104°. A rigor occurred on each day. Further intramuscular injections of 20 c.cm. of scarlet fever antitoxin were given on the second, third, and fifth days following; in all 80 c.cm. were injected in addition to the dose on admission. During the pyrexial period vague pains were felt in the hips and knees. An area of reddening occurred over the coccyx, and pain and tenderness were present over the left great trochanter. The first heart sound had become muffled. The blood culture gave a growth of *Staphylococcus albus* only, which may or may not have been causal but was probably a contaminant.

Two days after the last injections of scarlet fever antitoxin the temperature no longer showed a typical septicæmic course, but varied between 98° and 100° and became normal in the course of ten days, only one small rigor occurring during that time. The pains in the limbs were no longer present, and no pus formation occurred at any of the reddened or tender points. Definite improvement and convalescence followed. This was interrupted by a mastoid operation for the persistent otorrhœa, which later showed signs of extension to the mastoid cells. From this she made a good recovery, and she was discharged well, with the wound healed four months after admission.

For four weeks after admission the girl's condition was unsatisfactory, and in the fifth week it became much worse with the onset of rigors. The administration then of large doses of scarlet fever antitoxin, all intramuscularly, proved of great value and the condition improved from that time.

CASE 7.—A male, aged 2½ years, was admitted on May 31st, 1930, the fifth day of illness, with a history of sore-throat, vomiting, and rash. On admission no rash was seen; the throat was slightly injected; the heart sounds were normal but tachycardia was present (pulse-rate 130 per min.) and the temperature was 99·8°. By the next evening the temperature had risen to 100·1° and the pulse-rate to 140 per minute. A typical stripped papillated tongue was now in evidence. A little bronchitis was present. The child complained of abdominal pain, and there was some abdominal distension but no tenderness or rigidity. The temperature remained between 101° and 103° for a further 18 hours and blood was taken for culture and for a Widal reaction. The next day the temperature was down to 99·4° and by the next evening it was normal. The Widal reaction was reported to be negative, but streptococci were grown from the blood culture. As, however, the temperature had reached normal by the time the laboratory report was received, it was decided to withhold serum for the time being. The temperature remained normal and the child made an uninterrupted recovery, no serum being given. Throughout this child was never so ill as any of the other children, constitutional symptoms being very slight.

These cases are presented as additions to the material already available on this subject. From the clinical standpoint it appears to be clear that in any case in which there is reason to believe that the septicæmic condition may be streptococcal, the repeated administration of scarlet fever antitoxin is well worth consideration. It may be that the action is entirely specific, but it is more than probable that non-specific protein therapy also plays its part.

The serum used for the treatment of these cases was Burroughs, Wellcome and Co.'s concentrated scarlet fever antitoxin, except in Case 5, where both Burroughs, Wellcome and Parke Davis and Co.'s scarlet fever (streptococcus) antitoxin were used.

I am indebted to Dr. E. H. R. Harries, medical superintendent of the Birmingham City Infectious Diseases Hospitals, for permission to publish these cases.

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CLINICAL AND LABORATORY NOTES

PARADOXICAL EMBOLISM OF THE BASILAR ARTERY.

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IN the following case two rare and interesting events were associated. The first, paradoxical embolism, was recognised by Cohnheim and has recently been the subject of special interest and study. The second, even rarer, is embolism of the basilar artery.

Dahl Iversen[1] has recently published a case of paradoxical embolism affecting a peripheral artery, the left external iliac. It was associated with phlebitis and venous thrombosis in the opposite (right) leg. Embolectomy was performed and a typical thrombus, 12 cm. long, which had doubtless passed through a patent foramen ovale, was removed. The patient made a complete recovery. Thompson and Evans[2] have presented five new cases of paradoxical embolism and give a statistical investigation of the frequency of patency of the foramen ovale in 1100 consecutive post-mortems. They have collected and analysed 24 cases of pulmonary embolism where this congenital defect was present. They also offer certain arguments upon the possibility of alteration of the normal relative blood pressures in the auricles following pulmonary embolism. Beattie,[3] who reported two cases of paradoxical embolism, first suggested (in 1925) that sudden obstruction in the pulmonary circulation, by raising the pressure in the right and lowering it in the left auricle, might influence the direction of blood-flow through a patent foramen ovale. The experimental work of Haggart and Walker[4] suggested this, for they had shown in cats that a rapid rise in the pulmonary blood pressure followed sudden occlusion of the left pulmonary artery. Barnard[5] reports a case occurring as a post-operative complication, with clot lodged in the foramen ovale, and also refers to obstruction in the main pulmonary arteries.

Embolism of the basilar artery is an extremely rare condition and no example of it has been found in recent papers. Cases have been reported, however, by Chadwick,[6] of Leeds, in 1886, and by Maudsley[7] in 1887. There are good anatomical reasons why it should be uncommon. The basilar artery has a wider lumen than either of its constituent vertebral arteries; hence an embolus which passes through a vertebral artery is unlikely to be held up in the basilar. Further, the artery is straight and of uniform calibre, having no sudden constriction, and its branches are given off more or less at right angles.[8]

CLINICAL HISTORY.

The patient, a healthy male aged 49, sustained a compound fracture of the right tibia and fibula with a severe lacerated wound of the leg. He was admitted to the Leeds General

Infirmary under the care of Mr. S. W. Daw and an amputation through the upper third of the right leg was performed, leaving a long anterior flap.

The patient apparently made satisfactory progress, although for some days the condition of the wound and flaps gave rise to anxiety. However, the local condition eventually settled down. Thirty-two days after operation I was asked to see the patient urgently. At 6.20 A.M. he had appeared to be in his usual state of health; a few minutes later he had complained of numbness in the left foot and tightness in the chest, and before further information could be elicited had lapsed suddenly into unconsciousness. When seen at 6.35 A.M. the patient was deeply comatose and could not be roused; the breathing was noisy, but soon assumed the Cheyne-Stokes character. The wound of the leg appeared healthy. The pulse-rate was 81 and the pulse of small volume; the respiration-rate was 30 and the temperature 99°. There were slight convulsive phenomena of general distribution with a tendency to very slight opisthotonos. Already there had developed general spasticity with increased tendon reflexes, clonus, and bilateral extensor plantar response. The eyes showed occasional and quite irregular jerking deviation to the right; the left pupil was small and non-reacting, the right large, dilated, and fixed. Examination of the heart revealed nothing abnormal; there was no irregularity or evidence of valvular lesion. A later examination of the chest, however, revealed certain indefinite signs near the middle of the right lower lobe in the posterior axillary line. Here, over an area of about two inches in diameter, despite the noisy breathing, distant bronchial breathing could be made out with slight impairment of the percussion note. With deepening coma, rising pulse, Cheyne-Stokes respiration, and a temperature reaching 103°, death occurred eight hours from the onset.

The diagnosis of paradoxical cerebral embolism was made upon the following grounds: the sudden cerebral catastrophe, the absence of signs of a cardiac valvular lesion, the presence of signs in the chest compatible with infarction of the lungs, and finally the existence of a wound which, although now clean, had a past history of sepsis and therefore introduced the possibility of venous thrombosis. The situation of the embolus was extremely doubtful and the diagnosis of an obstruction to the basilar artery was not formally made. It was, however, discussed by reason of the anomalous features of the paralysis. The rapid development of bilateral spasticity and exalted reflexes was considered distinctly unusual. The other points of possible importance were the jerking eye movements to the right and the tendency to hyperextension of the spine.

POST-MORTEM FINDINGS.

Autopsy was performed by Prof. M. J. Stewart, to whom I am indebted for the following notes (only relevant matter is included).

Brain, membranes, and vessels.—There is no evidence of basal meningitis. The vessels at the base of the brain show only very early atheroma. On close inspection a piece of thrombus fully 1 cm. in length is found in the basilar artery close up to the anterior bifurcation. The greater part is recent soft blood-clot, more or less filling the lumen of the vessel, but the anterior extremity is pale, friable, and non-adherent. It is only about 2 mm. in diameter.

Lungs and pulmonary arteries.—The larger branches of both pulmonary arteries and some of the smaller contain a number of detached portions of pale, soft, rather friable thrombus, very similar except for their larger size to the embolus at the bifurcation of the basilar artery. They are more abundant in the right pulmonary vessels than in the left.

Lungs.—On the postero-lateral aspect of the right lower lobe there is an extensive anthracotic and partially fibrotic area over which lies a considerable subpleural patch of adipose tissue. There is well-marked œdema elsewhere but no evidence of infarction.

Heart.—There is a widely patent, partially valvular foramen ovale. Its antero-inferior margin is curved and smooth and overlaps the posterior on the left auricular side. The postero-superior margin is thinner and overlaps on the right auricular side. Its margin is continued across by three fine fibrous strands, except for which a finger could easily be passed through the foramen. The overlapping of the flaps is incomplete, and without undue strain being put upon them there is an orifice with a diameter of 1 cm. from above downwards and 0·5 cm. across. The mitral and aortic cusps show patchy atheromatous degeneration, and similar changes affect the coronary arteries. The aorta shows very slight atheroma.

Post-mortem anatomical diagnosis.—Amputation of right leg for compound fracture; embolism of pulmonary arteries; large patent foramen ovale with paradoxical embolism of basilar artery.

COMMENTARY.

The chief features of interest in this case are: (1) the association of a somewhat unusual source of intravenous emboli with a widely patent foramen ovale; (2) the ante-mortem difficulty in determining which particular cerebral vessel had been occluded; and (3) the possible part played by the pulmonary embolism in determining the passage of a piece of thrombus from the right auricle to the left. On clinical grounds it appears improbable that the pulmonary embolism preceded the cerebral by any appreciable interval of time, though possibly they can be regarded as simultaneous phenomena.

In view of the large size of the aperture in the auricular septum and the absence of definite post-mortem signs of infarction in the lungs, it is perhaps more reasonable in this case to assume that a small particle of detached thrombus passed directly through the foramen, and that no important part was played by the pulmonary obstruction, which, indeed, may have been a later happening. In this case it is doubtful whether anything like one-third of the pulmonary circulation was obstructed, which, according to Thompson and Evans, is the minimum necessary to disturb the normal pressure balance between the auricles and thus favour the projection of a stream of blood from the right to the left. Granting, however, that there may have been some such disturbance and that the pulmonary obstruction was first, if only by a few seconds, then the fine fibrous strands across the foramen could offer obstruction only to a large mass of detached thrombus. There could be no serious interference with the passage of the small embolus which in the present case obstructed the basilar artery.

I am indebted to Mr. Daw for permission to publish this case.

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ADMINISTRATION OF OXYGEN IN PRIVATE PRACTICE.

By W. E. Waller, M.D. Oxf., M.R.C.P. Lond.

When the administration of oxygen is necessary in private practice and a cylinder and "fittings" are procured, the latter are often found to consist only of a length of tubing and a glass funnel. The amount of the gas used has therefore to be calculated either from the sound as the gas is emitted or from the rate of the flow of bubbles when the distal end of the tube is held under water, the proximal end being attached to the nozzle of the cylinder. The former method is wasteful, the latter inconvenient. In country practice complicated apparatus is not usually available at short notice, and the following improvisations, which I have employed for many years, will be found to work well.

A gauge for measuring the flow of gas can easily be made as follows. A suitable bottle of one pint capacity is fitted with the cork supplied with Potain's aspirator. The rubber tubing supplied as "fittings" is cut into a short and a long portion; the former is connected to the nozzle of the cylinder and to the inlet pipe of the aspiration cork, the latter to the outlet pipe and the mask, the bottle being half filled with warm water or any selected fluid. The fitted bottle is slung and secured safely to the side of the cylinder by appropriate bandages. The flow of oxygen is easily controlled by this method, a rate of 8–12 bubbles per second being sufficient in most cases.

It may here be noted that, in most cylinders, if the tap is turned to such an extent that the hiss of gas is only just perceptible, the rate of emission is such that the cork of the gauge described above would be blown off instantly. It may also be noted that special oxygen bottles, fitted with cork and inlet and outlet tubes can be obtained at a cost of about five shillings.

If the above method is impossible, a large basin of warm water is arranged on a table close to the bedside, the tube is attached to the cylinder and its distal end is held under the water, the rate of flow of the bubbles being noted. When using this method, as much of the tubing as possible is kept below the surface of the water, in order to warm the gas slightly. This method, though often used, is inconvenient; the gas is not moistened, the mask has to be detached for testing, and accidents with the basin may occur.

A glass funnel used as a mask is both wasteful and inefficient, but a much more efficient mask can be improvised in about one minute as follows. A circle of ten inches diameter is cut from two or three layers of newspaper and a single radial cut made through all layers from circumference to centre (Fig. 1). A cone is then formed by rotating the edge *a a* to the line *b b* to form the inside, the edge *c c* being then rotated in the opposite direction to form the outside. The two free edges *a a* and *c c* should both be on the line *b b* when the cone is complete, and may be secured by pins or stitches (Fig. 2). The apex of the cone is then cut off to an extent just sufficient to allow of the passage of the tube, the end of which is "flanged" to secure it in position (Fig. 3). If some kind of expiratory valve is considered necessary, a small D-shaped opening is cut through all the layers (Fig. 2) and covered by a thin flap of tissue paper sufficiently large to overlap the edges. This flap is gummed in position on the outside of the mask by its straight limb only. The edges of the mask can be fashioned so that the fitting to the patient's face is reasonably accurate.

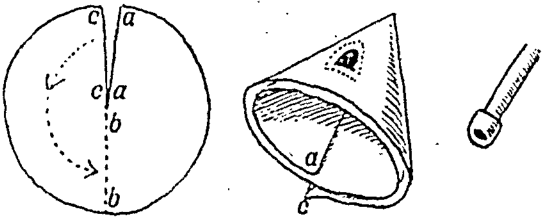

FIG. 1. FIG. 2. FIG. 3.

Improvised mask for administration of oxygen.

Two special precautions in the administration of oxygen in private practice may be mentioned:—

1. The apparatus should be tested in a place other than the sick room, so that the attendants, by practice, can learn to avoid any startling noises, cork-blowing, or other phenomena which might alarm a nervous patient.

2. The patient should be placed in a position of complete ease and relaxation, as far as his condition allows. It is of importance that the mask should be held in position by the attendant for the whole of the prescribed time. On no account should the patient be allowed to undergo the exertion of supporting the mask himself.

Rustington, Sussex.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

AT a meeting of this Section held on March 24th the chair was taken by the President, Dr. R. A. YOUNG, and a discussion on the

Value of Liver in Treatment

was opened by Dr. JANET VAUGHAN. The anæmias she said, could be classed according to their response to liver. Those responsive to liver and stomach extracts included idiopathic pernicious anæmia, sprue, the pernicious anæmia of pregnancy, and pernicious anæmia associated with intestinal lesions. This group was characterised by a deficiency in the gastric digestion of protein and a megaloblastic hyperplasia of the bone-marrow. Clinically and experimentally it seemed likely that the effective principle in liver and stomach extracts was essential to the normal development of megaloblasts and that it was elaborated by the gastric digestion of protein. The liver and kidneys were probably only storage depôts. When faulty gastric function prevented the development of this principle the megaloblast was unable to develop and therefore proliferated.

The second group, consisting only of secondary anæmia after hæmorrhage, was responsive to whole liver and not to extracts.

The third group was responsive to whole liver, and also to iron. It included secondary anæmias associated with starvation, cancer, hæmorrhage, and deficient dietary in children. In the second and third groups there was no defect of protein digestion, but there was often achlorhydria. Megaloblastic hyperplasia did not, therefore, occur, and extracts, which only contained the principle affecting megaloblastic tissue were useless. The deficiency was perhaps due to faulty absorption of both iron and the second factor present in whole liver, the failure depending on achlorhydria. Iron was more readily absorbed, in small doses, from an acid than from an alkaline medium.

A fourth and fifth group were constituted respectively by anæmias and blood diseases, irresponsive to liver: simple achlorhydric and aplastic anæmia and secondary anæmias associated with leukæmia, sepsis, nephritis, Banti's syndrome, acholuric jaundice, cirrhosis, and scurvy; and hæmophilia and purpura hæmorrhagica. Some observers had claimed that these two blood diseases responded to liver, but Dr. Vaughan's experience had not confirmed this claim.

She described work on grain-fed pigeons, showing the effect of liver feeding on the marrow and blood cells. The reticulocytes in pigeons were increased in number and altered in character by effective doses of liver. The reticulum was more densely stained and the nucleus much more immature. The results had been obtained whether the liver was given by mouth or intravenously, except when sepsis was present, but no response had been given by clinically inactive extracts or control substances, with the exception of beef-steak.

Intravenous administration was ideal in acute cases, but not always possible, and the best substitute was massive oral feeding. The need was to give as much as possible in the shortest possible time. If the patient could not swallow heroic doses such as 3000 g. the liver must be given by stomach-tube or per rectum with saline or glucose. It was possible to calculate to within 1 per cent. the level to which the reticulocytes would rise in a patient. There was an accompanying increase in the serum uric acid, a fall in the serum pigment, and disappearance of iron from the tissues. The red-cell count must be kept above 4 million. Extracts were very much more effective than whole liver.

The factors in liver affecting blood production were as specific in their action as vitamins or endocrines. Minot had shown that the anæmia of scurvy was influenced by orange-juice, although liver and iron were ineffective. Liver was only of value in anæmia when it could supply some already existing deficiency. A greater quantity of liver was required to affect a cord lesion than to alter the blood picture; there had been a failure in the past to appreciate the need for adequate doses.

Certain factors could affect the absorption of liver: sepsis, nervous lesions, arterio-sclerosis, and iron and thyroid deficiencies. If they were present the dose must be doubled or trebled. A mild sepsis might account for inability to keep the blood count up, and should be found and treated. Old people often needed a higher maintenance dose than younger ones. Thickened vessels might cause some failure of absorption of essential substances, as other deficiency diseases were apt to occur in arterio-sclerotics. Iron deficiency might occasionally affect acute cases, but was very often a definite factor in maintenance-dose cases. A certain small group of cases with lowered basal metabolic rate did not respond properly unless thyroid were given as well as liver. Liver therapy could only receive justice if these factors were realised and the necessity of an adequate dose was grasped. An "adequate" dose was usually one that appeared to be absurdly large.

DIAGNOSTIC CRITERIA OF PERNICIOUS ANÆMIA.

Dr. S. C. **Dyke** said that there were many mistaken diagnoses of pernicious anæmia, both negative and positive. It was essential to find evidence of an average increase in the size of the red cells, achlorhydria and hæmolysis. The colour and volume indices were usually above unity, though in a few rare cases the former might be low. A modification of the Pijper method by which a film of the blood was used as a diffraction grating should never be omitted in these cases. Hæmolysis was shown by skin colour and urine examination, and especially by the van den Bergh test; and achlorhydria by the test-meal, which should be repeated after the administration of histamine. A few cases of obvious pernicious anæmia had shown free hydrochloric acid. Free acid was essential for the development of the anti-anæmic principle, but anæmia might apparently develop even in its presence. The response to liver formed a final diagnostic test. To determine whether or not any case would respond to liver need not take long; the reticulocyte crisis occurred about the fifth day. If it was not seen by then, the case was probably not one of pernicious anæmia. A very good idea of whether or not a reticulocyte shower was taking place could be obtained by making an ordinary blood-film on a slide smeared with brilliant cresyl-blue. There was a characteristic platelet deficiency, and retinal hæmorrhage had been seen, though ordinary purpuric manifestations did not occur. The liver treatment caused a platelet crisis rather later than the reticulocyte crisis, but the platelet count did not always fall again.

When a patient took whole liver well it could be given on alternate days with the extract, but the results were the same whatever the form in which liver was given. Commercial extracts varied considerably in potency. For weak patients half a pound of liver a day might be a severe ordeal, and extracts of proved potency were of great value. Blood transfusion was becoming less and less often needed; it could be used too freely. The gastric symptoms often took patients to surgical wards, but were soon relieved by hydrochloric acid. Bouts of nausea and anorexia should be regarded as remissions; the dose should be increased, not reduced, and hydrochloric acid should be given and perhaps the make of extract changed. There was no value in iron and arsenic tonics or "stuffing." The nervous manifestations were often the most distressing feature; they usually improved rapidly on liver if there were no pareses or definite lesions. Severe lesions slowly and steadily improved after the red cell count had passed four million for some time. There was a tendency for everybody to be satisfied with the patient's condition when the count was about 3½ million, but in these cases nervous manifestations might occur or relapse. The blood count must be carefully watched, as relapses might be very insidious.

The grave anæmia of pregnancy was fairly well defined and might respond to liver. It responded admirably to blood transfusion alone. Secondary anæmia from hæmorrhage responded to liver in puerperal gastric and hæmorrhoid cases, and in cases of ulcerative colitis and metrorrhagia. The effect was enhanced by iron. Liver was unsuitable for early cases of gastric ulcer, as it caused acid secretion in the stomach; moreover, it caused the fæces to give the reaction for occult blood and so might confuse diagnosis. Liver and iron had no effect on the bowel lesion, but were useful for the anæmia of ulcerative colitis. Liver was useless for chlorosis.

EFFECTS OF STOMACH EXTRACTS.

Dr. J. F. **Wilkinson** said it seemed possible that the gastric mucosa might be a very potent source of the substance lacking in pernicious anæmia. The stomachs of the ox and sheep had not proved to have therapeutic value, but the raw stomach of the pig had given excellent results. One patient was keeping well on 2 lb. of raw stomach per month, eaten during the three days after his monthly visit to hospital. This was the cheapest and most palatable method known. Desiccated extract also acted satisfactorily, and the initial dose, even in severe cases, need not exceed one or one and a half ounces. The average maintenance dose was between one-third and three-quarters of an ounce. It was essential to use an active preparation. The results in pernicious anæmia and the pernicious anæmia of pregnancy were very similar to those obtained with liver, but rather more rapid. Of 114 cases, 108 had been on this treatment for over six months; 31 had relapsed on liver treatment. All had done well and none had needed hydrochloric acid and pepsin for gastric trouble. Six per cent. still had some degree of nervous impairment, and 92 per cent. were free from symptoms, although more than half had complained of paræsthesiæ before treatment. Three of eight cases with definite postero-lateral involvement of the cord were now on full work, and four were greatly improved. In no case had a missing reflex returned. Blood counts were over 5 million in 85 cases, and over 4 million in 22 cases. Some were over 6 million. It was essential that the treatment should be continued and that regular blood examinations should be made. The slighest infection, even the common cold, profoundly influenced the red cell count, and the dose should be temporarily increased. The active substance in liver and in stomach was not the same.

Aplastic anæmias and acute leukæmias did not respond to pig's stomach, but some improvement had been seen in cases of gastric operation for hæmorrhage. One case of cancer of the mouth associated with a pernicious anæmia blood picture had done remarkably well; in another the blood picture had changed to that of secondary anæmia. The gastro-intestinal symptoms of simple achlorhydric anæmia were well relieved, but the blood condition was not affected. Pig's stomach also gave remarkable results in cases of vague gastric trouble associated with achlorhydria. One woman with pernicious anæmia had become pregnant and her blood count had never fallen below 4 million; she was taking an ounce of pig's stomach daily.

DISCUSSION.

Dr. **WILLIAM BROCKBANK** said that 50 per cent. of cases of pernicious anæmia returned to normal health on liver treatment and that, but for nervous manifestations, another 15 per cent. could be added to that figure. The less the liver was cooked the better; it might be cooked for a minute or two. The juice could be squeezed out of the raw liver and flavoured with orange-juice and the rest of the liver mixed with the food. Almost all patients retained some degree of anisocytosis, but platelets returned to normal. Flatulent dyspepsia, often with diarrhœa, tended to persist, even on liver diet, but was relieved by pepsin and hydrochloric acid sipped throughout meals. A persistent eosinophilia had been noted several times.

Dr. **G. W. GOODHART** pointed out that megalocytosis alone was not a sound criterion of pernicious anæmia. He had known a number of cases that appeared from the blood count to be typical pernicious anæmia, but did not produce the asymmetrical curve which was essential for diagnosis. This possibility was worth remembering for cases that did not respond to liver. Cases with free hydrochloric acid might respond very well to liver treatment.

Dr. **VAUGHAN**, in reply, said that at least one commercial extract did not affect the gastric acid and she had used this without mishap in gastric cases. The patient's diet was very important, especially vitamin B in nervous cases. The patients rarely took a balanced diet unless specially instructed.

Dr. R. Prosser White, consulting dermatologist to the Royal Albert Edward Infirmary, Wigan, and president of the Association of Certifying Factory Surgeons, has been elected an honorary member of the Vienna Dermatological Society. He is the only English recipient of this honour.

LONDON ASSOCIATION OF MEDICAL WOMEN'S FEDERATION.

AT a meeting on Feb. 24th, with Dr. **LETITIA FAIRFIELD** in the chair, a paper on the technique in

Low Classical Cæsarean Section

was read by Mrs. **F. IVENS-KNOWLES**, who reported results in 352 consecutive cases under her care from 1919 to 1930. No craniotomy on a living child or panhysterectomy except for fibroid tumours had been performed during that period. Of 352 cases, 99 were repeat operations, 67 for the second time, 25 for the third, and 7 for the fourth.

In 266 cases the indication was a contracted pelvis, with a total maternal mortality of four (1·5 per cent.); 168 were performed before or early in labour with a mortality of 1·2 per cent.; 66 late in labour (including cases of obstructed labour) with a mortality of 1·5 per cent.; 24 after instrumental induction of premature labour with no mortality; and eight after attempted forceps delivery, with one death from *Staphylococcus aureus* septicæmia after two separate attempts at forceps delivery. Fourteen cases were operated for eclampsia and other toxæmias with one death (coma), and five for accidental hæmorrhage with one death. Central placenta prævia was the indication in 25 cases. All the mothers survived, and only two infants were stillborn. Other conditions—fibroid tumours, ovarian cysts, atresia of the cervix, excessive size of the fœtus, brow presentation, advanced age of the mother, and bicornuate uterus—accounted for 27 cases, with no mortality. Ten cases were for cardiac or pulmonary disease, with one death from sepsis; the fœtal mortality was 8·8 per cent. The number of primigravidæ was 129, and of multigravidæ, 223. Of the latter 12 had previously had a craniotomy, and 40 had had stillbirths. Twenty-nine had had one stillbirth, 10 had had two, and one had had three. Cases operated upon early in labour showed a very low morbidity, whereas cases of obstructed or protracted labour showed a morbidity-rate of nearly 50 per cent. Two cases were known to have ruptured in a later pregnancy, both at about 28 weeks, and both cases of advanced chronic nephritis. The husband of one patient had refused sterilisation. In one repeat operation, where a bulging of the membranes was seen at operation, the patient was syphilitic, and her first operation had been done when she was in extremis from obstructed labour. It was noteworthy that even in cases where the operation had been performed late in labour and the puerperium had been morbid the uterine scar was sound. Six cases were known to have stood the test of vaginal delivery, two only requiring forceps.

After careful consideration of the results obtained, Mrs. Ivens-Knowles was of opinion that there was much to be said for the low classical operation, which was rapid, easy, and could be adopted for all cases, even when the head was firmly fixed as in a funnel pelvis. It was certainly advantageous to the child. Enough time had not elapsed for statistics to show whether uterine rupture was less frequent after the lower segment operation, but a case had been reported by Ridler where the upper segment scar held in a later pregnancy while the lower segment itself had ruptured, and the extraperitoneal operation appeared to be followed by a high morbidity-rate from suppuration of the abdominal wound, uterine infection, phlegmasia alba dolens, and vesical fistulæ. A death from venous hæmorrhage between bladder and cervix in the transperitoneal operation had been recorded.

REVIEWS AND NOTICES OF BOOKS

Anatomy in the Living Model.

By DAVID WATERSTON, M.A., M.D., F.R.C.S.E., & F.R.S.E., Bute Professor of Anatomy in the University of St. Andrews. London: Hodder and Stoughton, Ltd. 1931. Pp. 255. *25s.*

A well-written book by a prominent anatomist dealing with the material in a new and interesting way. It aims at helping the student to examine the living subject both at rest and in action, pointing out the reasons for the changes to be observed in passing from one of these states to the other and incidentally affording much side information in the process. Description of particular parts of the body is preceded by an excellent general account of the skin and its associated formations, functions, and conditions; Prof. Waterston gives some presentations of arterial areas which we think have remained unnoticed since Madame Philippe Belloc published a monograph on the subject some years ago. The regions of the body are studied separately, their surface appearance and relations being dealt with first, the alterations in movements and the mechanics involved in actions at joints being considered subsequently. These sections should give the reader a comprehensive idea of what movement is taking place at each joint.

The text is amplified in the sections on the head and neck and trunk by the inclusion of plates produced by orthogonal projection; these, being drawn from various dissection stages in the same fixed subject, admit of tracing and superimposition if required. Prof. Moody some years ago brought forward numerous X ray photographs taken from Californian students which illustrated his view that the normal positions of abdominal viscera are frequently put at much too high a level. British surgeons and anatomists as a whole have not yet been able to see their way to admit this so far as British bodies are concerned, and we observe that Prof. Waterston gives Dr. Moody's findings in addition to his own but expresses no opinion on them.

Apart from its value to the clinician we think the book might find a place with the young student, for he could follow much of it on the body he is dissecting, and his more recent acquaintance with details of structure would be of help to him when he is studying the function here dealt with. We note in modern works a growing tendency to stress function at the expense of structure. Of this we cannot approve; function should go with structure not in place of it, and one is just as important as the other. The illustrations are good and clear; we would like to see added to them a comparative chart of segmental and root distributions. The book is well produced and we welcome it as an excellent effort to vivify the student's anatomy.

Philosophy of a Biologist.

By LEONARD HILL, F.R.S. London: Edward Arnold and Co. 1930. Pp. 88. *3s. 6d.*

Sir Leonard Hill has written an up-to-date version of the 104th Psalm from the point of view of one who has spent a lively and productive life in experimental biology. His booklet is a vivid appreciation of the glorious majesty of the world as science sees it, of the oneness of everything alive and dead, and of his conviction that behind it all is some infinite eternal power which is often called God.

Normale Anatomie des Kopfes im Röntgenbild.

(Radiologische Praktika, Vols. XII. and XIII.). By KARL GOLDHAMER. Leipzig: Georg Thieme. Part I. 1930. With 30 photographic plates and illustrative schemas, and 15 projection diagrams. M.120.

Part II. 1931. With 44 photographic plates and illustrative schemas and 26 projection diagrams. M.120.

INTRACRANIAL surgery in its rapid development during the last 20 years has owed much to radiology, and radiographic examination of the skull is now regarded as an essential part of the investigation of every case of intracranial tumour. The technical excellence of radiograms of the head is nowadays so satisfactory that positive information can be obtained in about half the cases investigated, though it is not always of equal value. There is a tendency, however, to push interpretation of skiagrams beyond justifiable limits, and it is probably true that at the present day more negative surgical explorations for intracranial tumour are undertaken from faulty radiological interpretation than from any other cause. What is wanted is a greater knowledge of the normal radiological appearances of the head, such as these atlases set out to provide. Dr. Goldhamer has collected a series of radiograms which demonstrate clearly what may be displayed by X rays of the anatomical features of the normal skull. They have been taken from various aspects, and for each aspect there is figured a radiogram of the dried skull, another of the skull of a living person, and diagrams illustrating in two dimensions the position in which the skull or head was placed when these pictures were taken. Each radiogram is provided with a skeleton one on transparent paper, and to this the author has supplied an elaborate key, in four languages, from which the identity of any line or area may be ascertained.

The first volume is planned to consist mainly of general views of the skull as a whole in the lateral, postero-anterior, and antero-posterior positions, and is particularly noteworthy for displaying the variation in radiological appearances that may be obtained by slight alterations in the position of the head. For example, if a radiologist wishes to know what position of the head will best show the foramen magnum in a radiogram he has only to study the photographs in this atlas. The second volume is concerned with the radiological appearances of particular parts of the skull, especially the orbit and the temporal bone, and also of the bones of the face. It shows convincingly the value of the author's parieto-orbital view in demonstrating the optic foramen, and it provides a useful comparison of the methods of Schüller, Stenvers, Mayer, and Fischer for displaying the various portions of the temporal bone. The author relies on single films and, with others of the Vienna school, does not appear to have appreciated the value of stereoscopic radiography in the skull.

These volumes are produced in magnificent style by Georg Thieme. The radiograms of the dried skull are uniformly excellent; those of living patients are below the standard that we have become accustomed to look for in this country. The two volumes contain much information that will be of value to those who are beginning work of this type; more experienced radiologists will find them extremely useful as books of reference.

The Science and Practice of Surgery.

Third edition. By W. H. C. ROMANIS, M.A., M.B., M.Ch. (Cantab.), F.R.C.S. Eng., F.R.S. Edin., Senior Surgeon in Charge of Out-Patients, St. Thomas's Hospital, and PHILIP H. MITCHINER, M.D., M.S. Lond., F.R.C.S. Eng., Surgeon in Charge of Out-Patients, St. Thomas's Hospital. In two volumes. London: J. and A. Churchill, 1930. Vol. I., pp. 772; Vol. II., pp. 950. 14*s.* each volume.

THE appearance in a third edition of this well-known text-book of surgery indicates that it has attained the popularity that it deserves. It covers the whole ground of surgical pathology, surgical anatomy, diagnosis, and treatment with an admirable brevity which leaves nothing of importance unmentioned. The authors have ably avoided the dogmatism which mars so many text-books of surgery, and have managed to separate fact from theory and personal predilections from accepted practice. The illustrations are profuse and good, the printing, paper, and binding excellent. A noteworthy feature and one of great value to the student or practitioner using this book as a work of reference is the inclusion in each volume of an index of 73 pages. This is one of the best text-books of surgery that the student can read for his examinations or that the practitioner can keep on his shelves for reference in doubt or difficulty.

Public Health Practice in the Tropics.

By J. BALFOUR KIRK, M.B., Ch.B., D.P.H., D.T.M. & H. With 80 illustrations. Churchill's Empire Series. London: J. and A. Churchill. 1931. Pp. 498. 15*s.*

ATTEMPTS made to confer on primitive societies the benefits of modern hygienic progress are beset with many obstacles. In order to explain the difficulties and to suggest measures of circumventing them, Dr. Balfour Kirk, who is Director of the Medical and Health Department of Mauritius, has written this well-supported treatise, and, in doing so, has been guided by considerations of actual practice. He deserves congratulation for having produced such a comprehensive piece of work. It is divided into two parts, the first on preventive medicine and the second on sanitation. Preventive medicine in this book covers most human infections, bacterial and intestinal, beri-beri, protozoal diseases, small-pox, venereal diseases, tuberculosis, undulant and yellow fevers. The sanitation section includes housing and town-planning, schools and school hygiene, milk and meat, water-supplies, public latrines, disposal of excreta, refuse, and disinfecting.

Dr. Balfour Kirk writes with a facile pen and provides information which is accurate and notably up to date; in fact, the highly technical data in the sanitation section is hardly available elsewhere. The tables and illustrations are admirable. We commend this work to all students of tropical hygiene.

Technique and Results of Grafting Skin.

By H. KERRICK CHRISTIE, M.S., F.R.C.S., Surgeon to Wanganui Hospital, N.Z. London: H. K. Lewis and Co., Ltd. 1930. Pp. 67. 7*s.* 6*d.*

THIS small book describes the author's experience in the use of Thiersch, Wolff, and pedicle grafting of skin. Its value lies in the advocacy of the Wolff grafting method, which is apt to be rather neglected. An unexpected measure of success seems to follow its use if the graft is retained firmly in apposition with its bed. The descriptions of pedicle and inlay grafting are hardly clear or detailed enough to enable a novice to follow out the technique. The striking success obtained by the author in skin grafts on old patients is interesting and encouraging.

Journal of Pathology and Bacteriology.

THE March issue (Vol. XXXIV., No. 2. Pp. 125–299) *contains the following articles.* Waldemar Haffkine (1860–1930), by W. Bulloch. An interesting account of the beginnings of preventive inoculation with bacilli and of the remarkable man who introduced vaccination against cholera and plague into India.—The Precipitation of Diphtheria Toxoid by Potash Alum, by A. T. Glenny and Mollie Barr.—The Rate of Disappearance of Diphtheria Toxoid Injected into Rabbits and Guinea-Pigs: Toxoid Precipitated with Alum, by A. T. Glenny, G. A. H. Buttle, and M. F. Stevens. In these two important papers from the Wellcome Laboratories at Beckenham, it is shown that diphtheria toxoid may be purified and concentrated by precipitation with potash alum and that the resulting precipitate forms a superior antigen for immunisation owing to its insolubility and retention in the body.—Malignant Neoplasm of Spleen and Bone-marrow with Metastases in Liver, by C. G. Paine (Sheffield). A hæmendothelioma.—The Intracutaneous Method of Testing Diphtheria Toxin and Antitoxin, by A. T. Glenny and Mona Llewellyn-Jones (Beckenham). A detailed technical account of the most recent method of titrating diphtheria antitoxin which is more convenient, rapid, and accurate than the subcutaneous method, and can detect 1/50,000th of a unit.—Latent and Occult Tuberculous Infection of Bronchial Glands, by W. M. Cumming, S. J. Hartfall, and J. G. Thomson (Leeds and Grassington). Bronchial glands from 108 non-tuberculous subjects were examined histologically and inoculated into guinea-pigs. Tubercle bacilli, of human type, were isolated from seven, of which three were histologically positive. None of 101 cases bacteriologically negative showed a histological lesion.—The Effect of Diet in Epidemic Infections in Mice, by W. W. C. Topley, M. Greenwood, and J. Wilson (London).—Changes in the Blood-Sugar and Blood Phosphorus in Rabbits following the Injection of Suspensions of *B. aertrycke*, by M. E. Delafield (London). Hyperglycæmia followed by hypoglycæmia in which the animal dies.—Astrocytoma of the Cerebrum, showing Extensive Involvement of the Opposite Cerebral Hemisphere, by E. A. Linell and K. G. McKenzie (Toronto). The growth was found microscopically to extend far beyond the naked eye limits.—The Intracutaneous Method of Testing the Toxins and Antitoxins of the "Gas Gangrene" Organisms, by A. T. Glenny, Mona Llewellyn-Jones, and J. H. Mason (Beckenham). The method works well for *B. welchii*, *B. œdematiens*, *B. histolyticus*, vibrion septique, and the lamb dysentery organism.—An Analysis of the Data Collected by the Status Lymphaticus Investigation Committee, by M. Young and H. M. Turnbull (London) (see THE LANCET, March 14th, p. 593).—Metastasis of the "Benign" Giant-celled Tumour of Bone (Osteoclastoma), by S. C. Dyke (Wolverhampton). A primary tumour in the patella gave fatal secondaries in lungs, kidneys, and lymphatic glands after five years.—Malignant Osteoclastoma, by J. W. Orr (London). Primary growth in lower end of femur, secondaries in lungs.—A Jenner Stain for Sections, by H. M. Turnbull (London).—A Simple Warm Stage for Class Purposes, by R. A. Webb (Cambridge).—Giant Colony Culture, by J. F. D. Shrewsbury (Birmingham). Colonies up to 1½ inches in diameter.—Bulk Staining of Museum Specimens, by H. W. C. Vines (London). Hæmatoxylin and Sudan III.—Obituary Notices of G. H. K. Macalister (portrait), Chung Yik Wang, and J. H. Teacher (portrait).

THE LANCET.

LONDON: SATURDAY, MARCH 28, 1931.

THE SALE OF PROPRIETARY MEDICINES.

IT would be almost true to say that there is no law governing the sale of proprietary medicines. Provided that the seller takes out a patent medicine licence, costing five shillings a year, and that certain dutiable medicines bear an Inland Revenue stamp, showing that the duty has been paid, there is no check on the traffic in medicines or nostrums, unless they contain a scheduled poison. In the latter case the medicines may be sold only by registered chemists, and the package must be duly labelled in accordance with legal requirements. The majority of proprietary medicines do not contain any scheduled poison, and thus we live in a country in which it costs more for the right to keep a dog than to physic a neighbour, which does not seem reasonable since the dog, besides being a useful animal, is the friend of man. At various times attempts have been made to protect the public alike from its own credulity and from the wiles of the nostrum vendor. The most notable attempt in our time was the introduction into Parliament of a Bill based upon the recommendations of the Select Committee of 1914, reprinted as a special supplement to THE LANCET of Jan. 10th, 1925. This Proprietary Medicines Bill was read a second time in the House of Lords on August 6th, 1920, and it is regrettable that it has not been reintroduced. The reason is, no doubt, that it embodies sufficient material for controversy to cause any Government to hesitate to allot time for its discussion. Another Bill has now been drafted by the health advisory committee of the Labour Party. Its sponsors hope to find an opportunity of introducing this measure in due course, but it is difficult to believe that if a Government Bill having a similar purpose has no chance of consideration a private member's Bill of a still more far-reaching character has any chance of making its way through all the parliamentary stages in the life of the present administration. They may be hoping that its mere introduction will convince the public of the need for legislation, and so lead to the reappearance from its pigeon-hole of the well-considered Bill of 1920.

The draft Bill, which in respect of the majority of its provisions is the same as the 1920 measure, proposes to set up a register of owners of proprietary medicines and owners of proprietary surgical appliances as well as registers of proprietary medicines and surgical appliances. It seeks to make it an offence for any person to manufacture any proprietary medicine unless he is registered as the owner of the medicine or is a person authorised by the registered owner. The medicine itself would also be required to have a number assigned to it on the register. The Bill would make it an offence to sell or to advertise for sale any medicine or surgical appliance for the cure of deafness or rupture or for the cure or relief of the following diseases or infirmities: cancer, consumption, lupus, fits, epilepsy, amenorrhœa or other diseases peculiar to women, diabetes, paralysis, locomotor ataxy, Bright's disease. These are the diseases specified in a schedule to the Bill of 1920, and it is provided that any other disease or infirmity may be added to the schedule by the Minister of Health after approval by Parliament. It is also sought as before to prohibit the advertisement to the public of articles for producing abortion or miscarriage; the prohibition is now extended to claims for the cure of sexual weakness, or for the promotion of sexual virility in the male and sexual desire in the female, or for other specified purposes relating to sexual excess. It would become an offence for the registered owner or vendor of any proprietary medicine or proprietary surgical appliance to invite any person to enter into correspondence with him on any ailment or to offer to give advice to any person on the treatment of any ailment. The publication of fictitious or misleading testimonials would be stopped. If a statement is made that a proprietary medicine is recommended by a duly qualified medical or dental practitioner, the name and qualifications of the practitioner must be given. If quotations are made from the medical press to support an advertisement the precise reference must be given. It would be an offence to make a statement calculated to induce any person to believe, contrary to the fact, that a proprietary medicine was discovered, invented, or compounded by a duly qualified medical practitioner. In the case of any synthetic drug, sold as a proprietary medicine, such designation or description as may be directed by the Minister of Health must appear on the label. Finally the Minister would be empowered to remove from the register any medicine or surgical appliance which appeared to be likely to cause injury to health.

The proposed Bill may seem to many people to constitute a counsel of perfection. Short of requiring the disclosure of the formula on the label it goes nearly as far as it would be possible to go in a perfect State. It should be noted, however, that the keeper of the registers is prohibited, under a maximum penalty of 12 months imprisonment or a fine of £500 or both, from furnishing to any person, or even in a court of law, any copy of or extract from any entry in the register. A formula would remain just as much a secret as it is at the present time. But apart from this the draft Bill contains provisions likely to give anxiety to vested interests. If it can be used as an instrument for persuading the Government to reintroduce the Bill of 1920 it will have served its purpose.

RENEWED INTEREST IN VITAMIN A.

THOUGH one of the first accessory food factors discovered in 1912 by Sir GOWLAND HOPKINS was appropriately named vitamin A, it was not many years before the two main properties ascribed to this fat-soluble vitamin were found to be separable. The label A was retained for the factor, the absence of which spelt failure of growth and, in rats, liability to xerophthalmia; while the antirachitic factor which was found often but not invariably associated with vitamin A was called vitamin D. For many years the newcomer deflected attention from the growth-promoting factor, and this is hardly astonishing. The apparently conflicting results obtained by workers who had investigated the causation of rickets from different standpoints; the unexpected mutual support for the two rival theories which arose from the discovery that exposure to U.V. light or internal administration of vitamin D were equally potent remedies; and the explanation afforded by the successful attempts to activate ergosterol, the parent substance of vitamin D, by U.V. rays is one of the most dramatic stories in modern medicine. But in recent years there has been a revival of interest in vitamin A. In our own columns this week Dr. H. A. HARRIS shows how in the young animal the proper differentiation of bone and marrow cells depends on an adequate supply of this vitamin. And in the report of the Medical Research Council for 1929–30[1] special attention is drawn to the work on this factor of Prof. E. MELLANBY and Dr. H. N. GREEN in Sheffield, Dr. S. S. ZILVA, Miss E. M. HUME, and Mrs. SMEDLEY MACLEAN, D.Sc., at the Lister Institute, Dr. T. MOORE at Cambridge, and Prof. J. C. DRUMMOND at University College.

The subject has been approached from two opposite angles. Biochemical studies have been directed towards the discovery of the parent substance of vitamin A, and clinical experiments have been undertaken to test the value of this vitamin in increasing resistance to infection. The clinical experiments are not yet far advanced. Prof. MELLANBY and his co-workers have started from the basis that vitamin A may have primary value not only in defending the body against infective disease but also in promoting recovery after infection has been established. At the Jessop Maternity Hospital, using a concentrate prepared and supplied by Messrs. Lever Bros., they have achieved results which suggest that the chances of recovery from puerperal fever are notably increased by treatment
ith vitamin A, and, moreover, that this vitamin
Te preventive value against puerperal infections.
go so far as to hint the possibility that
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the key to less complex problems. Various tests now in progress should soon show whether it has practical importance. In the Royal Air Force a certain number of volunteers doing indoor and outdoor work are being given a regular course of vitamin A, and their liability to colds and other ailments during the winter months are being compared with that of a corresponding control group of men. Another inquiry has been set on foot, in coöperation with the medical staff of the London County Council, to ascertain the value of this vitamin in the treatment of otitis media after scarlet fever and in the prevention of dangerous infective sequelæ after the common infective fevers. In Sheffield it is being tried on patients with pneumonia and rheumatic fever.

Explanation of the mechanism of any effects observed must await the results of biochemical studies which are being prosecuted with vigour throughout the world. More than ten years ago American workers found that vegetable substances containing the yellow pigment known as carotene produced the effects of vitamin A in animal experiments, whereas colourless vegetables were less effective in this respect. Miss K. COWARD confirmed these results, finding that material from the yellow part only of the pheasant's eye narcissus was an effective addition to a vitamin A-free diet. Animal fats rich in vitamin A, however, were found to contain no carotene, so the connexion remained uncertain. The more recent observations of Prof. H. v. EULER in Sweden, that carotene can replace vitamin A in the diet have led to renewed activity in the search for the parent substance of this vitamin. Prof. MELLANBY and Miss J. HOPWOOD have found carotene to be as potent as vitamin A in promoting functional improvement in cases of experimentally produced degeneration of the spinal cord. It has also been used with success to replace vitamin A in its specific action against spontaneous infection in the rat. Prof. DRUMMOND has found evidence that the pigment is converted into the vitamin somewhere in the body, and Miss HUME and Dr. SMEDLEY MACLEAN have confirmed their association. The experiments of Dr. MOORE suggest strongly that carotene is a precursor of vitamin A. His claim that the liver oil of rats and cows cured of vitamin-A deficiency by carotene show a quantitative conversion of pigment into is
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[1] March 7th, p. 547.

made provision for a number of these cases at the Northern Hospital, Winchmore Hill. This hospital is now under the control of the London County Council, and in his first report[1] to that body the medical superintendent, Dr. G. A. **Borthwick**, has given a description of its organisation and working, and has also presented a brief survey of the present state of our knowledge of epidemic encephalitis. At first provision in this special institution was made only for children, but since May, 1929, accommodation has been available for some adults, and the question of setting apart more pavilions for adult cases is now under consideration. There has been a continued decline in the number of young children admitted to the unit, while a large number of adults of both sexes are awaiting admission. The treatment of post-encephalitic states can, of course, only be palliative, since the symptoms are consequences of organic cerebral disease, and nothing can be done to restore the destroyed or damaged structures in the brain. But we do not perhaps sufficiently recognise how much palliative treatment can accomplish. Of the patients that have been in this hospital during the five years it has been devoted to post-encephalitic cases, 45 per cent. have been classified as suffering from disorders of behaviour, and 46 per cent. from the parkinsonian syndrome. Dr. **Borthwick** deals separately with the treatment of cases in these two classes.

The changes in character and morals, the restlessness, querulousness, destructiveness, the vagrancy, pilfering, masturbation, obscene conduct, and so on, that commonly follow epidemic encephalitis in children are attributed to loss of inhibition over crude instinctive reactions. The general curriculum of the children's section, which is under specially chosen teachers, is based on the endeavour to avoid the circumstances that evoke strong instinctive reactions and to develop the patient's powers of mental diversion, because the child's capacity to inhibit or cut short these morbid impulses by the direct power of the will seems undeveloped or lost. Punishment of any kind is without effect and is never resorted to in the unit. All the children have routine lessons, including instruction in handicrafts, on five days a week. Holidays are given, but during and immediately after the holidays some deterioration in conduct and discipline is always noticed. The milder cases have done well with the orderly routine of the hospital school and whilst in residence have almost reached normal standards of behaviour; the more severe cases have benefited to a certain degree by the environmental treatment and, taking the cases as a whole, the stay in hospital has been greatly beneficial to the majority. Two drugs, bulbocapnine and to a less extent lobelia, have been found to have the effect of reducing the patient's excessive instinctive activities, and in consequence of their use the work of the teachers and staff has been made easier. Drug treatment is however only palliative and no cure is claimed. Even with bulbocapnine a few cases of severe behaviour disorder have been so unmanageable as to require discharge. Many of the cases of disordered behaviour have gradually changed into parkinsonism, and the very significant observation is recorded that in such cases the tendency to disorder of conduct ceases as generalised parkinsonism comes on. For the parkinsonian syndrome medicinal treatment with hyoscine or with stramonium has been found most effective. The dried extract of stramonium (U.S. Pharmacopœia) given in pill in doses of 0·25–1·0 g. or more three times a day, has produced very good results, the muscular rigidity in many cases being completely relieved; helpless patients have become able to walk, and to dress and feed themselves. The dose has to be a large one, but these patients show exceptional tolerance of the drug and no deleterious effects have resulted from its prolonged use. Many other drugs have been tried without success. Exercises, massage, passive movements after hot bathing, and other forms of physiotherapy have been of some benefit. Many of the milder parkinsonian cases will ultimately be discharged with a reasonable hope of their being able to lead a useful life outside the institution under continuous drug therapy.

It is, we believe, the impression of those who see these cases in the out-patient departments of hospitals and elsewhere that the total number of post-encephalitic patients is less than formerly. The incidence of epidemic encephalitis has shown a marked decline generally throughout the world during the last few years. In 1924 the number of cases notified in England and Wales was 5039; in 1929 it was 1036. The number of deaths attributed to epidemic encephalitis has not, however, decreased in proportion; in 1924 the figure was 1407, in 1929 it was still 1037. It seems likely that the latter figure must represent almost entirely deaths among the chronic sufferers of the sequelæ of the disease. Not only has the incidence of epidemic encephalitis diminished, but the severity of its manifestations in the acute stage has also steadily diminished; death during the acute stage is now very uncommon. A neurologist who attends at one of our largest municipal hospitals, as well as neurological and other hospitals, has informed us that he has not, for several years, seen or known of a case of encephalitis lethargica fatal during the acute stage. It seems then that the death-rate among the post-encephalitic patients is a high one. It may be noticed that in 1929 the number of deaths was almost identical with the number of cases notified, so that for every new case notified an old case died off. Unfortunately the notified cases do not represent the whole incidence, and therefore the total number of sufferers from the after-effects of encephalitis was still probably increasing in 1929. The experience of 1930 suggests that when the figures for that year are available they will show a further reduction in the number of notifications and no great change in the number of deaths. In other words, we may hope that the stage has been reached at which the total number of post-encephalitic patients living has begun to decline.

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[1] London: P. S. King and Son. No. 2811. 6d.

ANNOTATIONS

DISTRICT NURSING IN LONDON.

EVERY practitioner who has worked in one of the poorer districts of the metropolis will be willing to testify to the tremendous debt he owes to the district nurse. On her quiet and cheerful competence depends more than half his success, and from his shoulders she lifts an incalculable burden of responsibility and anxiety. The London County Council has just published a survey of district nursing in its area [1] by Dr. Margaret Hogarth. The associations working in London fall into three main groups: those affiliated to the Queen's Institute, independent associations, and the nursing branch of the Ranyard Mission. The standard of nursing was considerably raised in 1914 by the formation of the Central Council for District Nursing, a voluntary organisation with advisory powers only, but with the control of large charitable funds, which enables it to lay down standards. There are now less than half a dozen nurses who are not fully trained. The Queen's Institute, which has over 700 affiliated associations throughout the country, governs 22 of the 32 associations in London, which means that the nurses in these associations have had six months' additional training to teach them how to adapt their hospital standards to domiciliary work. The Ranyard nurses also have six months' additional district training. The result is a really remarkable service. Dr. Hogarth observes:

> "The further I investigated the domiciliary nursing of London, the more I was impressed with the tremendous amount of individual and collective voluntary effort expended in securing for the poorer classes a free nursing service of the highest quality obtainable . . . . The standard of nursing is high and is maintained at a consistently high level . . . . so that there is no difference in the quality of nursing at the disposal of the poor and of those who are in a position to pay for the services of a private nurse, except that the nurse has to do more for a patient where not only the comforts but the actual necessaries of life are hard to procure."

The superintendents are paid from £80 to £170 a year with board, lodging, uniform, and laundry, and the nurses receive from £63 to £75 a year. In some places there are no allowances and the salary is about £200. After 21 years' service a Queen's nurse receives a pension of £30 a year, reduced to £14 at the age of 65. The Ranyard Mission also has a contributary pensions scheme, but some of the independent associations have not. The average cost per visit is 1*s*. 4*d*., and the average cost per nurse, including all ordinary administrative expenditure, is £195 per annum. The main sources of income to cover these expenses are voluntary contributions, patients' payments, and public funds. Subscriptions and donations, which demand great effort to raise, meet less than half of the expenses, and rather less than one-fifth is obtained from the patients. Only in exceptional circumstances does a district nurse attend a patient who can afford the full fee of 5*s*. per visit. A provident system of payment is widely used by the Ranyard nurses, each household contributing a few pennies weekly to ensure free nursing attendance. A great grievance of the associations is that the income from patients' contributions is diminishing with the growing popularity of the Hospitals' Savings Association; when the patient leaves hospital the almoner arranges with the nursing association for further treatment, which the patient assumes will be covered by his contributions to the hospital. Just over one-third of the income comes from public funds; borough councils pay for the nursing of notifiable diseases, pregnant and nursing mothers, children under five, maternity cases and other special services, or else contribute an annual grant.

The nurses will undertake almost anything; the majority of their cases are medical, while about 30 per cent. require surgical care. The treatment of diabetes by insulin falls heavily upon the district nurses, as does also the care of cancer and senile cases. No board of guardians employed its own nurses, and poor-law patients who could not be admitted to institutions were referred to the district nurse. Although the greater part of the midwifery of London is undertaken by independent midwives and training schools, most of the district nurses hold a C.M.B. certificate and some of the associations definitely undertake obstetric work and maternity nursing. Their nurses also give general rubbing treatment for simple orthopædic cases, and a few of them attend infant welfare centres or other clinics. They undertake the home nursing or home visiting of tuberculosis by special arrangement with the borough; they nurse insured persons for approved societies and they coöperate in the school nursing service, for which the London County Council employs a special staff of 360. They look up children whose attendance at the minor ailments centre is irregular and visit those who have been operated on for tonsils and adenoids. As Dr. Hogarth remarks, the educational value of the visits is an outstanding feature. Each visit is the practical application of an immense amount of theoretical teaching.

> "A district nurse's visit to a tuberculous patient is illuminating. She sees to the comfort of the patient, the disposal of the bed, the collection and disposal of the sputum, the care of the crockery and the food. Everything is made simple and easy and at every visit the education of the family proceeds. A nurse's influence permeates a whole neighbourhood, and her opinion is respected in proportion to her immense practical value. From what I have seen of the work of these nurses in the homes, I do not consider that the educational and preventive effect of a nursing visit can be over-estimated. . . . I am of opinion that for any domiciliary nursing of patients under the new arrangements the services of these nursing organisations should be retained and that a district nurse should be present at each medical session at district offices or dispensaries."

This magnificent work depends, Dr. Hogarth thinks, very much on the type of woman found at the head of the work. A striking tradition of altruism pervades the service and the work is more a vocation than a profession. For this reason, if for no other, it is important that the devotion of the nurse should not be exploited, even in the interests of the public.

FRANCIS GALTON.

How Prof. Pearson manages to keep up his output of research work has been a wonder for some time, and now with the publication of the third and final instalment [1] of his Life of Galton he has added to English literature what we consider to be the best account of a scientific man that ever has been. He tells us in the preface how he has been able to do this: "I have written my account," he says, "because I loved my friend." Galton was a man of endless curiosity and exceptional intelligence; he started a variety of hares for other people to chase, and almost everyone who reads these stately volumes will, we imagine, be surprised to find that it was Galton who put this or that topic on the scientific stocks. We hope that some day the collected edition of Galton's writings, once contemplated and then abandoned, may come within the capacity of his Foundation. Meanwhile, we have in substitute, in the second and third volumes of the Life, a critical and annotated account of these writings, and the commentary adds a value which a bare reprint would wholly lack. The present volume is of particular interest in drawing together the main and more permanent interests of the man. Chapter 14 shows how Galton groped his way into the ideas of correlation and the application of statistics to the study of heredity—the subject out of which Prof. Pearson and his pupils have developed a mathematical discipline which Galton always refused to attempt to follow. Chapter 15 deals with fingerprints and is mostly of technical interest. And in Chapter 16 headed "Eugenics as a creed and the last decade of Galton's life," we come to the culmination of the whole tale. It tells us what Galton stood for as well as what he did. Eugenics (why do not we call it "Galtonism"?) is, in the words of his will, the study of "the agencies under social control that may improve or impair the racial faculties of future generations physically and mentally" and, with any number of offshoots and collateral excursions, it was his abiding concern throughout his mature life and the glow of an active old age that closed after a few days' illness at 88. Prof. Pearson need make no apology for the freedom with which he appears in these closing scenes; the correspondence between his master and himself gives us a picture which could have been drawn in no other way, and which we are glad to have for both their sakes. All through, and especially in the final long chapter, which gives a selection of Galton's letters throughout his life, we get to know something of what Galton was: how he took Herbert Spencer to the Derby, how he liked to cut a cake, his studies in tea-making, and above all, his love for his family and his friends—personalia as germane to the complete biography as is the precise scholarship of the abundant footnotes.

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[1] L.C.C. Survey of District Nursing in the Administrative County of London. P. S. King and Son, Ltd., 14, Great Smith-street, S.W.1. Pp. 18. 1*s*.

[1] The Life Letters and Labours of Francis Galton. By Karl Pearson. London: Cambridge University Press. 1930. Vol. iii. (in two parts). Pp. 673. With 59 plates and other illustrations. 69*s*.

ACUTE POLIOMYELITIS IN GREECE.

IN a communication to the Société de Thérapeutique of Paris Dr. Petzetakis,[1] of Athens, states that a considerable number of cases of acute poliomyelitis were observed in Greece last year. According to the notifications received by the Greek Ministry of Health the number was about 300, of which nearly 70 were in Athens. Most of them were observed in June and July. These figures, however, Petzetakis says, do not give a clear idea of the real incidence of the disease, for they merely represent the notified cases with paralysis and do not include the mild and abortive attacks which are of such great epidemiological importance. In most cases the onset was sudden with high fever. In Athens the disease was not found in the centre of the town but in the outskirts. In several instances, of which Petzetakis himself saw two examples, it occurred in the same family. He also had an opportunity of observing formes frustes in which the symptoms were general pains, diarrhœa, headache, and hypertension of the cerebro-spinal fluid without actual paralysis. In two cases, of children aged 2½ years and 3½ years respectively, convalescent citrated blood was given. The first child, whose symptoms were diarrhœa, fever, retention of urine, paresis of the muscles of the neck and feet and cerebro-spinal hypertension and lymphocytosis, was given 100 c.cm. by intramuscular injection in the course of five days. Twenty-four hours after the first injection the retention of urine passed off and subsequently the other symptoms rapidly subsided, so that by the end of the first fortnight of the disease recovery took place without diathermy, actinotherapy, or electrical treatment. The fever, however, persisted and the temperature did not become normal until the twenty-eighth day. In the second case the symptoms were those of Landry's paralysis. The onset was sudden with high temperature, and within a few days the muscles of the abdomen, bladder, neck, respiration, and heart were affected. The cerebro-spinal fluid showed considerable hypertension and increase of albumin and sugar as well as polymorphonucleosis which was not replaced by lymphocytosis until the twelfth day. 155 c.cm. of citrated blood, of which 10 c.cm. was given intrathecally and the rest intramuscularly, were administered in the course of eight days, with the result that the respiratory and cardiac symptoms rapidly disappeared, leaving only paraplegia of the lower limbs. The fever, however, persisted as in the previous case, and there was still considerable constitutional disturbance. Pettit's serum which had just arrived at Athens was then given, 100 c.cm. being injected into the sacrolumbar muscles in the course of four days, with the result that the temperature rapidly fell, the general condition considerably improved, and there was a return of the right plantar reflex. The case suggested that apart from its recognised efficacy at the onset of the disease Pettit's serum may be of value even at a late stage.

NO INTRODUCTION NEEDED.

A PREFACE rarely does more than spoil a book a little, and the harm is mitigated by the probability that it is only read by the reviewer. But we could name several books which have been seriously marred by the author's wish to get someone important to explain why the book came to be written. In the present case the explanation defeats the object of the book.[1] Not that we do not share Dr. Kimmins's admiration of the way the author "brings into play material from a variety of sources to support and amplify his main purpose, without the risk of rousing any prurient curiosity in the mind of the child." But Dr. Kimmins, while admitting and endorsing the author's contention that children should read the story for themselves, evidently forgets that his foreword will also be available to child readers and that his very mention of "prurient curiosity," "evil effect," "information obtained from tainted sources," and "emotional reaction to sex," destroys its value. We trust that a new edition will speedily be called for and that it will be issued without any foreword. The book itself seems to us faultless. In less than 50 octavo pages of large type Mr. de Schweinitz explains the processes which have puzzled all children in all times, without attempting to evoke any emotion at all, certainly not that gratitude for maternal care or admiration of divine achievement which overflows from the final perorations of many such books. One can imagine a child, having satisfied a natural curiosity, forgetting for years much of the accurate and detailed information supplied, and that is the highest praise we can give this book.

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[1] Bull. Soc. de Thér., Feb. 11th, p. 79.

[1] How a Baby is Born. By K. de Schweinitz. With an appreciation by Dr. C. W. Kimmins. London: George Routledge and Sons. 1931. Pp. 95. 2s. 6d.

ELECTRO-SURGERY IN GYNÆCOLOGY.

THE use of high-frequency currents in gynæcology has been closely considered in a long paper by Robert Fowler of Melbourne.[1] Generally speaking, he says, the undamped current has good cutting qualities and is used for electro-section, while highly damped currents will desiccate or coagulate tissue but will not cut. Besides these, the direct destruction of tissue by the galvano-cautery, energised by a low-frequency current, may be included under the term "electro-surgery." The equipment consists of (1) a source of alternating current, (2) a high-frequency generator with separate terminals for clinical tappings of the desiccating coagulating or cutting current, and (3) suitable electrodes with control switches in the circuit. Among his methods Fowler includes the simple process of galvano-cautery (epithermy) and "indirect endothermy" (diathermy) on a condenser couch. Of interest are the surgical operations performed by "direct endothermy," using the cutting, desiccating or coagulating current through some operating electrode, the patient resting on a large indifferent electrode pad. Among operations thus performed are simple ones like removal of a polypus, and complicated ones like pan-hysterectomy and Cæsarean section. In some cases the method seems unnecessarily elaborate for the task in hand, but many of Fowler's suggested uses seem appropriate. For example, the badly damaged "pre-cancerous" cervix appears to react well to linear cauterisation with the Oudin desiccating current or to igni-puncture; indeed, he almost goes so far as to propose that a suspicious-looking cervix should be treated as malignant until it is proved otherwise. If rapid improvement does not take place under diathermy it is recommended that radium needles should be implanted. Other apparently valuable uses for the cutting current are for severance of the vaginal vault in pan-hysterectomy—the current being slightly damped to secure hæmostasis—and for enucleation of intra-mural myomata. Coagulation is advocated for vulval warts, caruncles, and nodular enlargement of Bartholin's glands, and a combination of coagulation and cutting for the removal of vaginal or vulval growths. Fowler is against "medical" diathermy for pelvic inflammation, because he fears it may cause a flare-up.

EPIPHYSITIS IN THE HIP.

G. Darcourt points out[2] that besides the chronic affections of the hip—traumatic, nervous, infective, &c.—of which tubercle is the commonest, there are three other big groups: congenital malformations, arthritis deformans, and epiphysitis. His interesting paper deals with the last of these, which he subdivides into coxitis, affecting the acetabulum; coxa plana, affecting the femoral head; and coxa vara, affecting the femoral neck. He tries to show that all these are really the same disease, that they are errors in ossification, and that such differences as appear to exist are due to variation in the site of the lesion and the age of onset. In discussing coxitis, he quotes Froelich, who subdivides it into two varieties according to whether it involves the acetabular roof or the floor. In both varieties, he says, X rays show that rarefaction and condensation go on simultaneously, that the appearance suggests an error of ossification rather than an inflammatory destructive process, and that the alterations in the shape of the acetabulum are due to the pressure of the femoral head. If the roof is affected, then the pressure will cause it to slant and secondary subluxation will occur; if the floor is softened then the acetabulum will become deeper and the femoral head will sink further and further into it. The first variety should not be confused with congenital subluxation, because, though in this latter the acetabular roof does slant, there are no alterations in the structure of the bones as there are in coxitis; neither should the second variety be mistaken for arthritis deformans, for the femoral head retains its contour until very late in the disease. He admits that eventually both varieties progress to alterations in the shape of the femoral head and even to ankylosis, but this he attributes to secondary changes in a mechanically deranged joint.

Coxa vara is also subdivided into three types—the juxta-trochanteric, the mid-cervical, and the juxta-epiphyseal. According to Darcourt one part of the neck grows more rapidly than the other, with the result that there is a change in the direction of growth. If the upper part grows faster than the lower, and, if this happens in a young subject where the femoral neck is not well defined, the juxta-trochanteric type will be produced, with a marked diminution in the angle of the neck of the femur. Similarly, if the growth of the anterior part of the neck exceeds that of the posterior, the femoral head will grow backwards and the neck will become convex anteriorly. This happens in the mid-cervical type, where the backward displacement of the head may be so marked as to give the impression that it is stuck to the great trochanter. If the disorder starts in adolescence, when the femoral neck is well formed, the head will grow downwards in relation to the neck, but there will be no alteration in the angle of the neck of the femur. Writing on coxa plana, he begins by saying that a great deal of confusion has arisen because of the tendency to label as coxa plana all cases of flattening of the head of the femur. He points out that flattening of the femoral head is common, as a secondary development, in most affections of the hip, whether they be inflammatory, mechanical, or congenital, and is by no means pathognomonic of coxa plana, whose most typical feature is fragmentation of the femoral epiphysis. He looks upon the condition as an error of ossification and does not agree with Calot, who attributes the alteration in the shape of the femoral head to the mechanical influences associated with minor degrees of subluxation. Neither does he agree with Murk Jansen, who thinks that the femoral deformity is secondary to a congenital abnormality of the acetabulum—i.e., ischium varum. Darcourt admits that in coxa plana the head of the femur may be raised and also that ischium and even ilium varum may be present, but there is no evidence to show that these are primary causes. Indeed, several cases are on record, he says, in which coxa plana developed in hip-joints that were known previously to be radiographically normal. He contends that the X ray changes in coxa plana are far too widespread to be explained either by Calot's or Murk Jansen's theories; for, not only is the femoral epiphysis involved, but also the epiphyseal cartilage and the femoral neck, and in some cases also the acetabulum, the ischiopubic ramus, and even the tuber ischii. Darcourt does not deal at length with the ætiology of all these forms of "epiphysitis"; he merely remarks that the endocrine theory has not been confirmed, and he inclines to the traumatic and infective theories. The infection or trauma, whichever it may be, upsets the blood-supply to the growing part of the bone. If the acetabulum is attacked, then one or other form of coxitis will occur; if the femoral head, then coxa plana will develop; if the neck, then one or other type of coxa vara.

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[1] Jour. Coll. Surg. Australasia, 1930, iii., 75.

[2] Actualités méd.-Chir. Paris: Masson et Cie. 1930.

DRUG ADDICTION IN EGYPT.

IN January, 1930, T. W. Russell Pasha, the Director of the Central Narcotics Intelligence Bureau of the Egyptian Government, startled the League of Nations Opium Committee by describing how Egypt had, in the preceding five years, become a nation of drug addicts. Hashish, cocaine, heroin, and morphine had been pouring into the country since 1925; "every village in Egypt had its heroin victims." Enormous profits had accrued to those engaged in this vile traffic, and several of the principal agents in the business had been traced, arrested, and convicted through the vigilance of Russell Pasha and the Egyptian police. The Director has now published the annual report of his bureau for 1930, a well-documented and illustrated volume dealing with the present situation in Egypt, the sources of the illicit traffic, the tricks of smugglers, narcotic legislation, and the active measures which have been adopted to restrict and prevent the evil which had grown in the brief space of five years to such alarming proportions. The report furnishes details of the exposure of several international gangs of drug smugglers and is embellished with the photographs of the most notorious members of this unholy alliance.

It is not surprising to find that Turkey, which is still outside any opium convention, has been a fertile source from which hashish, heroin, and crude opium have found their way into Egypt. The newly-established drug factories in Stamboul are known to be engaged in exporting enormous quantities of the alkaloids to Greece and thence to other countries. The report states "the estimated world's legitimate requirements of heroin in one year are roughly 2000 kilos, or two tons. The Turkish Government states that it exported, during six months, the total of *four tons* of heroin"; and this figure is believed to be considerably less than the total output. Elaborate tables are furnished giving the narcotics seized at the customs, or by the police, during the year 1930; the total amounts to 7800 kilogrammes, the greater part of which was hashish, largely derived from Syria. If the evidence derived from addicts themselves can be relied on it would appear from an investigation of 400 cases that heroin was the drug favoured in some 67 per cent. of the whole number. The cultivation of opium is now forbidden in Egypt and the Government, by penal laws and by active propaganda, under the able direction of Russell Pasha, is able to report hopefully of the present situation.

STUDY OF PUERPERAL INFECTION.

Queen Charlotte's Hospital has established a research and isolation department at Hammersmith for the investigation of puerperal sepsis. The authorities have wisely considered that it would be better at the present moment to spend money on making maternity safer than on providing more beds. The hospital has been built with every advantage. Each ward and room opens on to a sunny south balcony, which is made of teak and also serves as a fire-escape. All the doors are of metal or teak, since this wood is regarded as fireproof. The wards contain from one to five beds. When a patient first comes in she is classified bacteriologically and then put in a ward with other patients suffering from the same organism. The single wards are separated by glass walls which are frosted in the middle opposite the beds so that, while the nurse can keep observation on three beds at once, the patients cannot see each other. Every ward has a little observation guichet so that the patient can be watched without being disturbed. Every bed is provided with three electric plugs: one for a lamp, one for wireless, and one for the bell. When the bell button is pressed a gentle buzzing sound is made in the passage and a red signal arm falls down, so that the nurse can see at once which bell has been rung. There are special electrical thermostats for keeping the babies' milk at the right temperature. A special bed-pan room contains sterilisers used for bed-pans alone and heated racks on which to stack the pans, so that they are never cold. Each bed-pan is numbered and used only for its own bed. Specimens are stored in cupboards opening on the outside, so that no smells enter the building. The soiled-linen bins stand on outdoor platforms, from which the linen goes down on a lift to a special sterilising department.

The theatre block is full of convenient devices and is used extensively for treatment. Doorless apertures connect the central room with sterilising and sluicing rooms. There is an anæsthetic room and a recovery room, and instruments are kept in an hermetically sealed cupboard, which is made by a recess in the wall closed by a metal and glass door. The air inlet ensures the entry of warmed and completely cleansed air, and a special electrical sterilising and refrigerating plant is provided. The emergency lights are fed from a cupboardful of batteries and are switched on automatically when the main fails. Standard lamps lit by batteries can be wheeled into the theatre to give additional light. In the store room there is an ironing bench with a switch for electric irons, and all the shelves are formed by small detachable slats which slip out to be scrubbed. The resident's rooms and the rooms for the visiting staff are of the same high standard as the rest of the hospital, and the waiting room is provided with a couch on which an anxious relative can be put up for the night.

The site covers several acres, and the hospital hopes eventually to provide accommodation for 258 more beds, a number of them being prenatal beds. An old house adjacent to the building has been turned into a nurses' home. The laboratories occupy a three-storey block adjacent to the ward block, so that urgent work can be carried out day or night. On the ground floor are three main laboratories: routine bacteriological, histological, and biochemical, while on the first floor are research and sterilising rooms, the incubation room, the library, and a still room fitted with a double door to keep it as free as possible from dust. Another £3000 a year is needed to supply a full staff, but a start has been made by the Director, Dr. Leonard Colebrook, assisted by Dr. Ronald Hare. It is hoped to make a complete bacteriological survey of puerperal fever and to investigate the biochemistry of the toxæmias. Dr. Colebrook hopes to find out whether or not a limited number only of strains of streptococci are dangerous to parturient women and, if so, how to differentiate the ones that matter; also whether it is possible to protect the patient by vaccine, serum, or some drug such as metarsenobillon, with which encouraging results have been obtained. The unit certainly has excellent conditions for its important work.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.[*]

XII.—PSYCHOPATHOLOGY IN RELATION TO TREATMENT.

THE purpose of this final lecture is twofold, being firstly, to attempt some analysis of the relationship between doctor and patient, and secondly, briefly to discuss the different methods which may be employed in psychological medicine, both being considered mainly from the point of view of psychopathology. In previous lectures we have only dealt in broad generalisations, and perhaps it is particularly necessary to warn the reader of the inevitable limitations of this present attempt at analysis of a most difficult problem. However, in spite of the magnitude of the task, it is still necessary and valuable to attempt to trace the trends of unconscious motive, both in patient and physician.

WHAT THE DOCTOR WANTS TO BE.

It will be generally admitted that the rôle of the physician is a very difficult one, and we may therefore anticipate that the unconscious feeling towards it will tend to be one of *inferiority*. In other words, the doctor will feel that he needs all the help that he can obtain for the successful exercise of his profession, and we are by this time well aware that the unconscious has different methods of giving help to those who feel themselves to be in a position of relative inadequacy. We may perhaps surmise that the incarceration of many simple facts amidst long Latin names is due to a defence mechanism, since there is no doubt that we feel we know more about a thing when we have given it a name, especially if the name be a long one, possibly even more when the long name is a Latin one. Although it is only by scientific phraseology properly used that we can hope to understand one another, and the advantages of Latin are both historical and geographical, yet we may see here another example of how the unconscious motive may sometimes creep in where it is least suspected. Again, we need not criticise the behaviour itself, but it is always well to look for the hidden key of unconscious motive, before we can open the locked door of defensive rationalisation which tries to hide inadequacy.

In the uncertainty of our profession we need to feel both sure and safe, and it is towards these goals that we may expect our defence mechanisms sometimes to operate, creeping in unconsciously in certain instances to safeguard us from our own uncertainty. But if we agree to recognise the existence of such a protective tendency, we need not think for a moment that such mechanisms constitute the whole of our behaviour. Surely medicine, as both art and science, can stand above such needs, seeking and facing the truth simply and with courage, even if it is sometimes necessary to modify it for the greater comfort of our patients. We only need to find and face the facts; but amongst them we must not be too shocked if we find defence mechanisms, sometimes even in ourselves.

Perhaps the best way of feeling sure is the assumption of the already familiar rôle of *omnipotence*, which some of us are inclined to do. This is made more easy owing to the fact, as will be mentioned later, that the patient is anxious to thrust omnipotence and magic power upon us. Another form of over-compensation is the *heroic method*, in which case we may usually look for the heroism in the patient rather than in the doctor. It is quite certain that the heroic method would only be adopted when the physician felt himself to be in a position of relative inadequacy, and it is therefore a method which is liable to be influenced by the mechanism of over-compensation. Then there is the tendency to adopt *panaceas*, with all the would-be assurance that one really knows what one is doing, usually with the support of pseudo-scientific rationalisations. We believe in our panacea as long as we can, or until another one has come to take its place, and they are very useful to us in overcoming feelings of doubt and therapeutic impotence. But if all such methods are useful to the doctor, they are the absolute need of quackery, which, through ignorance of the practice of scientific methods, requires every help that omnipotence, heroism, and panaceas can afford in the extremely difficult task of successful therapeutics.

It is not to be wondered at, perhaps, that we should be afraid of our responsibility as practitioners and should therefore play for safety. Defence mechanisms towards this end will tend to define and limit our responsibility and interest to the greatest possible extent. This we may do by focusing our vision on the foreground of the *symptom*, rather than the much vaguer and more difficult horizon of the patient as a whole. This same tendency will lead us towards an attitude of *materialism*, because of its relative simplicity, which is fixed and finite compared with the uncertainties of less material or more psychological values. We should also expect the medical profession as a whole to be *conservative*, identifying itself with past prestige rather than accepting new ideas with all their added doubts and dangers. And finally, where the desire for omnipotence has been disappointed we shall expect to meet the *cynic*, who has protected himself against the failure of his phantasy by adopting an attitude that failure is inevitable and nothing is worth while.

WHAT THE PATIENT WANTS THE DOCTOR TO BE.

Father imago is a most important factor in the attitude of the patient towards the doctor and is primarily associated with the relationship of child towards father. The wish of the patient is that the physician should be benevolent, personal, ubiquitous, and omnipotent, possessed of a divine magic power to cure him of all his ills and to stand between him and all that he fears of evil, sickness, and death.

The patient's desire for magic is associated with a wish to have something for nothing, so that he does not have to do anything or know anything himself in order to be cured. The other side of this picture has already been mentioned in referring to the "rebel" motive, which is as willing to disparage the power of the physician, as its opposite is to exaggerate it to omnipotence. The patient with a rebel psychology may choose a doctor of the same type, who is to be found amongst the minority who are "agin the government" and the advocates of all that is most new.

WHAT A DOCTOR SHOULD BE.

It is sometimes said that all general practitioners employ psychotherapy in the treatment of their patients, but it is difficult to understand the word being aptly applied to any treatment which does not involve a knowledge of the pathology of the disorder and the reason for the method which is used. To prescribe a remedy blindfold and without knowing why is dangerously akin to quackery and yet, if it is true that physicians are using psychotherapy, it cannot be said that they usually know in what way they are using it. If the psychological side of medicine is of any importance, *psychopathology must be the foundation upon which the technique of its employment must be based.*

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[*] A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Earlier lectures of the series have appeared weekly in THE LANCET since Jan. 3rd.

Probably the most important psychological factor is the imago rôle in which, whether he wishes it or not, the doctor is invested with the power of magic and the privilege of mediator, and it is a matter of no small difficulty to decide to what extent the doctor is justified in pandering to his patient's psychological weaknesses, such as the desire for a coloured mixture or in fact for a medicine at all. It is not only a question of financial cost (the amount spent every year on unnecessary drugs being enormous), but it is also a matter of educating the patient's ideas towards the sounder basis of a less unconscious and a more truthful attitude towards the problems of his physical and mental health.

There are those, and they are many, for whom it is the doctor's duty to provide props to stay their instabilities, and for such as these a mixture of desirable colour and flavour would seem to be legitimate therapeutics, as long as it is employed wisely. But in his acceptance of the imago rôle, the physician must realise that besides his privilege of magician he also has the responsibility of *educator*, and this is very liable to be ignored in the easy satisfaction which may be derived from the former. In a previous lecture the right kind of father was described as one who was both coöperative and encouraging, humble rather than assuming omnipotence, not protective unless protection is required, and only very rarely punitive—and perhaps the same definition may be applied to the right kind of physician.

It is both interesting and important to consider the question, "Should a doctor attempt always to *cure* his patient, or may he sometimes rest content with *palliatives*?" because it raises a special problem in regard to psychological medicine. The removal of the symptom is all that treatment of psychological disorders by organic methods can ever hope to do, and it is at best a form of imago magic, at worst blind quackery. But what is the alternative? If we take the broader view of radical cure, we become involved in the responsibilities of being educators of character in the most unlimited fashion. We become guide, philosopher, and friend, as well as physician, and pilots of "the way" of life. Must the doctor then assume his ancient rôle of priest again, and be the spiritual guide as well as the magical medicine-man? To accept the responsibility of the one is to accept a great deal more than is at present included within the already overcrowded medical curriculum, and yet to confine his art within the limitations of the other is to place the physician dangerously near the blind self-satisfaction of the quack.

It is not necessary, probably, to add a word of warning as to the dangers of being a good physician, but we need to be aware of the added difficulties which we shall find if we choose to pursue the ideal of truth, whether it be in medicine or religion. It is the simple and the finite which will appeal to the patient and the rôle of the educator is by no means an easy one. The quack, with his assumption of omnipotence, is giving the patient what he wants, and the doctor with the bottle of medicine and electric spark is likely to have a larger practice than the scientist who sees more in illness than physical organs and material disease. In the same way, the preacher who presents his religion in terms of an anthropomorphic and benevolent Deity behaving in a way which is satisfactory to the wishes of his congregation, is more likely to fill his church than is the seeker after truth. But the problems of life frequently present themselves in those terms of the "birthright" and the "mess of potage." A good physician may content himself with the fact that he is building for the future, realising that in his rôle of educator to-morrow is sometimes more worth while than to-day.

Medical Treatment in Relation to Psychopathology.

It has probably been the experience of many physicians that the successes of their remedies depend to a large extent upon their own belief in them. In the early days of practice, when their enthusiasm and sense of a new power was unbounded, they were sometimes able to achieve results which later experience seemed to deny, owing to the fact that it had taught them the limit of their powers. If they failed to believe in them, their once faithful remedies might fail to cure.

There is much to suggest that there is more in medicine than the pharmacological properties of the drugs prescribed by the physician. A doctor's obvious belief in his own prescription is often of greater value than the drug prescribed. Although pharmacology is based on careful scientific tests, it still fails in many cases to account either for the successes or failures of certain drugs. There are some which have a definite and reliable pharmacological action, but there are many more, the effects of which are uncertain and the results of their prescription unreliable. The usual preference amongst patients for a coloured mixture is due to a very simple psychological attitude, which assumes that there is more virtue and strength in what is visible than in what is invisible. However much these simple psychological factors may be ignored, they are still of great importance in the success or failure of the administration of drugs which may otherwise be given merely according to scientific method and for their pharmacological properties.

For example, the examination of the pharmacological properties of *valerian* fails to show why it should have been used since ancient days in the treatment of hysteria, and yet its precedence in empirical therapeutics would tend to show that it may be employed in such cases with useful results. But perhaps there is more in valerian, as in a great many other drugs, than has ever got into the text-books of pharmacology. Recent work on the psychology of smell suggests that it may be through this means that valerian acts in hysteria, satisfying the desire or unconscious tension in a way that is not associated either with words, pharmacology, or behaviour. The smell of valerian is one of sexual potency and significance, although of a very primitive and unconscious character. It is therefore quite possible that valerian is therapeutically active in spite of its inertness from the point of view of pharmacology.

There are many other drugs which may owe their potency to similar unconscious factors, but it is necessary to consider from this point of view the whole subject of the administration of drugs, both orally and by injection. There is no doubt that the mouth is invested emotionally with a character and significance of great importance, and it is probable that the taking of any medicine by mouth from the hands of the doctor assumes the importance of an *unconscious ritual*, which may therefore have a definite therapeutic activity quite independently of what the drug may be which is prescribed. Then with regard to injections, why is it that patients in general regard this method of administration with greater awe than if they are merely given medicine to swallow? And why is it that many strong men are liable to faint at the prick of a hypodermic needle? Again, it may be that we are dealing with factors of unconscious significance, the importance of which we are not at present able to estimate or to define.

The field in which this psychological research needs to be employed is a very wide one indeed, but it is perhaps especially important in electro- and balneotherapy. The latter is particularly interesting in this connexion, and it would appear possible that as a therapeutic method it is deserving of far more general application than it has yet received, especially in cases of mental disorder. Reference has previously been made to the primitive emotional importance of water, which so often enters dreams with a mystic and liberating significance. It is well known that men are liable to sing in their bath, and Archimedes is not the only one whose mind has been more open to make a great discovery during this intimate but common-place operation. If it were possible to do so, a great deal of psychotherapy might be done more simply and rapidly, if it could be carried out with the patient under the liberating influence of a hot bath! Balneotherapy, with whatever scientific or artistic adjuncts it may be employed, has certainly much unconscious psychological significance.

We must at times have anticipated a reasonable certainty of cure in a large number of our patients, and of failure in a smaller proportion. It is as if any of us, with our different methods, can be successful with something like 75 per cent., and that in those cases the particular method adopted is relatively unimportant, although *the presence of the doctor is itself of therapeutic value.* The personal factor or "bedside manner" is of importance, but may it not be the case that it is the *unconscious therapeutics of the imago relationship* which is of primary importance in those innumerable cases in which the pharmacological activity of the drug prescribed is not in itself specific for the cure of the disease, or unless it be a transient affection which cures itself?

The great danger of the present system of medical therapeutics is that it is liable to "draw a red herring" of pseudo-scientific fallacy across the patient's attitude towards health and disease. There are many patients whose illness is unconsciously motivated, and for such as these it is most in accordance with their unconscious wish that they should find a doctor who will treat it as being organic and therefore beyond their control, completing the mutual deception by the prescription of a bottle of medicine. There are many others who resort to the surgeon and the gynæcologist in order that they may solve their unconscious emotional problems by the sacrificial ritual of oblation. Such patients are liable to return again and again, usually to different surgeons, carrying the scars which mark the triumph of the unconscious motive from one hospital and nursing home to another. Eventually, perhaps, they may fall into the hands of a psychotherapist, but by this time their case is like that of the patient on the hospital round who, having heard the opinion of all the students one after the other expressed against the need for an operation, followed by the surgeon's decisive and somewhat scornful statement to the contrary, said: "No, thanks; ten to one is good enough for me!"

Hygiene Propaganda.

However necessary the teaching of hygiene may be, there are many obstacles to be overcome before the general public can be educated to a better attitude towards problems of health and disease in mind and body. Progress will only be achieved in face of a wish to retain the easy attitude of irresponsibility which has been fostered in the past. It is so much easier to pay 9*d.* a week and claim medical services and a bottle of medicine, than it is to assume responsibility for the preservation of one's own health. Further, interest in hygiene, whether of mind or body, is liable to assume a morbid irrelevancy and to become a focus of self-centred hypochondriasis. It is not sufficient to teach the importance of alphabetic vitamins or the daily evacuation of the bowels, or even of the prevalence of rationalised defence mechanisms, because such isolated details tend to become matters of exaggerated importance, whilst all general principles are ignored. It is perhaps safe to assume that the first converts to hygiene would number amongst them many faddists and hypochondriacs.

To conclude this section, we may suggest that the problems of hygiene and the education of the general public in matters of physical health, would seem first of all to involve the conversion of doctors as a whole to a new attitude of mind based upon a knowledge of motive and the principles of psychopathology, rather than upon the more material foundations of anatomy, physiology, and pharmacology.

Psychotherapy.

Let us now turn from our general consideration of the rôle of the physician to the practice of psychotherapy.

Previous lectures have dealt almost entirely with the ætiology and psychopathology of mental disorders, because it was felt that this was the only way to establish psychological medicine on a reliable and reputable footing. But the physician must regard psychopathology as a means to the end of psychotherapy, and in the end he wants to know how his patient may be cured. Unfortunately it is often easier to understand than to remedy, and the physician who hopes to find a method of curing the weals and woes of the mind with anything as easy as a bottle of medicine and "rep. mist.," or the repetition of complexes and mechanisms, may be disappointed. Perhaps it is inevitable that the practice of psychotherapy should always fall short of the preaching of psychopathology, but it is probable that the next few years may see a great advance in our present methods of healing. This brief survey of the different methods of approach to the variety of individual problems is very inadequate, but it aims at being tentative, suggestive, and critical, rather than in any way complete or final.

It is perhaps hardly necessary to say that it is a mistake for the psychotherapist to think that he can afford to ignore the physical side of medicine. He cannot do so for two reasons: firstly, the mind is too intimately associated with the body for any symptom of mental or emotional disorder to be taken by itself without searching for a possible related physical factor; secondly, the patient requires reassurance on the physical side, and if a complete physical examination has not been made, he is able to keep at the back of his mind the feeling that the doctor has missed the most essential point—namely, his body—which he would much prefer to be ill rather than his mind. This physical examination should, whenever possible, include a routine pathological examination of blood, urine, and fæces, and a search for all sources of possible toxæmia. After this has been done, both patient and doctor are more ready to settle down to the task of finding and removing the "unconscious" cause. It must also be borne in mind that even neurotics have organic ailments. It sometimes happens that as soon as the patient is labelled "nervous breakdown," "neurasthenia" or "neurotic," the physician omits to consider the possibility of a concurrent organic state which may, in itself, have an important bearing upon the symptoms. The only safe rule is to approach the patient in psychological medicine with the same rigorous physical examination as he would be given if he were a problem in organic medicine, without the label "functional" or "neurotic" to complicate the picture.

There are two distinct therapeutic attitudes towards problems of psychological medicine, which may be described as the *static* and the *dynamic*. The static attitude is content to label the disease and regard it as an act of God which may at some future date be subject to automatic alleviation. The dynamic attitude makes no such optimistic and inert-minded premise, but adopts the attitude "This person is ill. Why?" It is quite true that we may still be ignorant as to the causes of certain mental diseases, such as the manic-depressive type, but the cause will never be found until a great many physicians have repeated the question "Why?"

The first step in psychological medicine, as in organic, is *history-taking*, but it is a far longer and more painstaking matter. It may be safely regarded as never ending, and is in many cases the larger part of treatment. It is important to stress the necessity for *accuracy and detail of verbal description*. If we are examining a broken limb, we have the fracture before us and by visual and palpatory examination we can discern the limits of the disorder. In psychological medicine our eyes can tell us a great deal and nothing should be missed of attitude and gesture, but for the rest we are dependent upon words, which are the data and the facts upon which we have to base our diagnosis and our treatment. Viewed in this light, words frequently assume a new meaning and importance as, for example, one patient who said, "I have always viewed sex, at bottom, as a filthy thing"; another, "I sometimes almost feel tempted to believe that there may be something greater in life than reason"; and another, "Whenever I put a match to the fire it always goes out." In such ways, patients will often make statements, the meaning of which is far more apparent to the doctor who knows how to interpret them, than to themselves.

It is sometimes useful to ask a patient, "What do you think is the matter with you?" not in order to believe what he says, but as an indication of his line of thought about himself and his illness. It often happens, however, that a very useful clue may be discovered by this humble question. Whatever the patient's statement may be, the only safe interpolation of the psychotherapist is "Why?" in order further to illustrate the source of motive. Argument and persuasion should not enter into history-taking.

Psychological medicine is full of theories, but it is safe to say that each individual case should be opened as a new book, more important than all the rest. It is never safe to assume that a mechanism or complex which has been discovered in another patient means the same in a new one. Each case should be, as far as possible, examined and treated independently of all the others. In this way we may hope to avoid trying to persuade the patient of something which may have been true of someone else, but is not true of him.

History-taking is of itself a beneficial therapeutic method, because of the *catharsis* which it affords. "Confession is good for the soul," and in the process of a painstaking history the physician will find that he has got much information for himself and probably much relief for his patient who has found both a sympathetic listener and an imago mediator.

PERSUASION.

There are many cases in which the therapeutic method must inevitably be limited, to a greater or lesser extent, to some kind of persuasion. This method is particularly suitable where time is limited or the patient has not sufficient intelligence to undergo the analytic or interpretative methods. It is almost invariably unwise to attempt analysis or deep investigation of the past in the case of depressed patients over the age of 50, and for these the method of persuasion and repeated reassurance is usually all that can be done.

There are certain dangers in the persuasive method, in that the doctor may be tempted to give advice which it is not to the advantage of the patient to accept. For example, it is by no means unknown for a doctor to advise his female married patients not to have any more children, because their mental attitude at the first pregnancy gave cause for some anxiety. The patient is probably herself seeking for some such deterrent advice and can make a great deal of neurotic capital out of it for the rest of her life, as a source of self-pity and self-excuse. Probably the worst kind of advice adopted by the persuasive method is that which has been given in the past with greater frequency than is the case at the present time—namely, that all a man's troubles will pass away as soon as he has "had a woman," or that all a female neurotic requires is to get married. Perhaps these are the very physicians who complain that psychopathology is solely obsessed with sex! It should be quite obvious that if the disability is a sexual one, the cause will not be advantageously affected by resorting either to prostitutes or marriage. The result of such advice, if carried out by the patient, is usually disastrous, as it merely tends to throw into relief the anxieties from which the patient was previously suffering. The doctor cannot expect to be able to convey to his patient either the principles of a healthy attitude towards the sexual problem or even the elements of good common sense, unless he both knows something of psychopathology and has overcome false prejudices of his own. However it is done, the general teaching of the common sense of sex hygiene requires to be undertaken from the psychological point of view rather than either the physical or "moral," so that we may first understand the motives and mechanisms of such faults and failures as the patient may display, without superiority or prejudice.

Under the heading of persuasion we may also consider advice as to the change of environment. This is a ready method which appeals, at any rate by its simplicity, both to doctor and relatives, but it is far from being always effective. There are cases in which environment has been a causative factor, and in these it may certainly be advantageous to change it for something less difficult, but to resort to a change of environment in all cases of mental disorder, is completely to fail to realise the innumerable ætiological factors which require consideration before any line of treatment should be embarked upon.

SUGGESTION AND HYPNOTISM.

Suggestion has been defined by McDougall as "a process of communication resulting in the acceptance with conviction of the communicated proposition in the absence of adequate logical ground for its acceptance." It is applicable in many cases in which suggestibility is the main factor in the ætiology of the patient's disorder, where we can thus hope to decondition an undesirable reflex and recondition a new one to take its place.

Successful suggestion therapy would seem to demand a certain temperament and personality on the part of the practitioner, and not by any means all of us are suited to carry it out, but it is very successful in certain cases. It is in hysteria that we are most accustomed to find hyper-suggestibility, but it must be made quite plain that although suggestion may cure the symptom it is not going to cure the hysteria itself. It is a comparatively easy matter to "cure" the hysteric suffering from amnesia, aphonia, or contracture of the foot, either by persuasion or suggestion, especially with the aid of spectacular electrical apparatus, but there is no doubt that after this has been done the patient's adjustment to life has not been fundamentally improved unless other steps have been taken to do so.

From the patient's point of view, the great danger of suggestion is that it appeals to their desire for a cure by effortless magic and the "button-pushing" method. If our desire is to help our patients to grow up, the consequence of suggestion is to keep them in the completely dependent attitude of children seeking for help from an omnipotent father.

Hypnotism is an extension of the suggestion method and may be carried out either by a "light" or "deep" technique. Most practitioners are content with the former and find that their successes by this method are as good as when deep hypnosis is attempted. Deep hypnosis is liable to increase the patient's tendency towards dissociation, but in light hypnosis the practice is not carried beyond the stage of increased suggestibility, and the deeper phenomena of dissociation do not take place. There are many varieties of technique, but in general the patient is encouraged to relax, with the aid either of tiring the eyes by focusing them on a point held close to and slightly above the line of vision, or by the repeated monotonous ticking of a metronome, and whilst in this state the therapeutic suggestion is repeated on different occasions.

THE ANALYTIC METHOD.

It is unfortunate, as it is liable to be very confusing, that there should be all the difference that there is between the general idea of the analytic method and the absolutely specific technique of the psycho-analytic school. The analytic approach to mental disorders is the ætiological pursuit of causative factors into the past, the childish and the primitive. Any such approach to the problems of the human mind must necessarily be analytic, but it is nevertheless not to be confused with psycho-analysis. Psycho-analysis means "Freud" and assumes both a specific psychopathology and a definite therapeutic technique. The latter, although invaluable for research work, can never be suitable for 99 per cent. of patients who require treatment, because of the time and cost which such treatment involves. The psycho-analyst operates only in an obstetric capacity and, taking no responsibility for the offspring, leaves all the work to be done by the patient without any interference on his part or attempt at persuasion. The patient lies upon a couch and, with the psycho-analyst usually somewhere invisible behind him, is told to report everything which comes into his mind, however irrelevant or undesirable it may seem to him to be, the first essential being that there must be no conscious reservation or alteration whatever. The psycho-analyst need not say anything during many such interviews (his presence acting as a "catalyst" for transference and imago reactions), and sometimes the patient's resistances may be such that the hour is spent in complete silence. This is repeated six days a week for months and even years, while the unconscious is gradually "worked off" through description, emotional abreaction and reassociation, with the minimum of interference or suggestion on the part of the psycho-analyst. The result is to develop an attitude of great reserve and self-control on the part of the psycho-analyst who needs to understand his method with extreme skill, which can only be the case if he has himself been completely analysed over a very long period by this method. It is quite obvious that neither the doctor nor the average patient can afford the time for this technique and, however desirable it may be, it must be put on one side for special cases and as a method of further research, while for the great majority we seek to develop the modified method which is more applicable to their needs. But this method must not be confused with psycho-analysis, which is a "trade-mark" for the specific technique already mentioned.

Whatever analytic method we may adopt there are certain common factors which demand consideration, the most important of which are *transference, resistance, and free association*. The relationship between the doctor and patient must be one of transference, in which, for the purpose of the treatment, the simple child-to-father relationship is used as the basis of the analytic technique. The patient will thus feel towards the doctor, and transfer to him, his imago feelings, and on this simplified battle-ground will be resolved the conflict of his unconscious. In doing so, it is inevitable that the patient's resistance will be aroused at some period to a greater or less extent, both the resistance which strives not to recognise consciously intolerable wishes, and the resistance which strives to retain unconscious wishes which have previously been gratified through the symbolical sources of his symptoms. The free association method traces back transferred affects to their primary causes and uses the material of symptoms, dreams, and everyday behaviour to discover the primary causative factors.

These modified analytic methods all involve a certain amount of *active interference* on the part of the doctor, who uses interpretation and re-education in his attempt to readjust his patient's life, by directing his thoughts along certain lines and suggesting causative factors and remedial measures. But such analysis must nearly always be more than a matter of "complex hunting," which seeks, by the rediscovery of repressed memories, to achieve the magical solution of the patient's problems. This simplest of all analytic methods may be found to work in a miraculous fashion in a very small percentage of cases, where there has been some traumatic experience which has been repressed from consciousness to become later causative of emotional disorder, but in the great majority of cases we are dealing with a *primary mal-adjustment to life through the misdirection of our patient's motives.*

A combination of hypnotism and analysis may be employed in some cases where the time factor is important and the repressed material difficult to arrive at by any other means. It is, however, a special technique which requires careful handling and it has the disadvantage of not keeping the patient in control of his own cure.

The pure psycho-analyst abhors the rôle of teacher, and by doing so cuts himself off from what has always been the primary source of the educator's achievement. But it would seem both desirable and inevitable that our analytic technique should be in continuity with the rôle of the teacher who works by explanation, interpretation, and re-education, although at the same time we need to recognise the importance of the phenomena of transference and resistance. There is no doubt that this teaching method can be of the greatest benefit in the great majority of cases, as long as the teacher has been trained to recognise the opportunities and limitations of his task. Do we doubt the power of words to build or to destroy, to hurt or heal, to comfort or annoy? There may perhaps one day be developed an art (or even science) of verbal surgery to cut and join with knife-like precision, but it will in no way resemble the bludgeonings of importunate argument and persuasion. It will be skilled, subtle, indirect, and interpretative, and may even have its own parallel technique of verbal anæsthesia. But our knowledge of psychopathology is at present much more highly developed and assured than our ability to use it in a satisfactory technique of treatment.

It has already been said that an unknown fear is more causative of anxiety to a patient, than one the source of which is recognised. Therefore, to interpret his fear to a patient, to help him to recognise the cause of it, is to define and limit it and give him power to control it.

For example, a patient was driving a car home after dark along an unfamiliar road, and having taken the wrong turning found himself going along a lane which finally ended in a ploughed field, far from the security of human habitation. All he needed to do was to turn the car round and return to the main road, but instead he felt himself overcome by an uncontrollable panic. All he wanted to do was to leave his car in the field, whilst he took to his heels and ran he knew not whither. But what was the cause of his panic? From whence came this transferred affect and what did it mean? Knowing his history it was quite easy to understand his feelings and behaviour because, quite apart from this misadventure, he had the psychology of the lost child who had been deprived at an early age of the feeling of security associated with his mother. Up to the age of 10, she had meant everything to him, but quite suddenly she had developed a psychosis and had been taken from him, and yet been kept isolated in the house in the care of special nurses, to be seen occasionally walking in the corridors, but never again to be a source of comfort to him. From that time he was liable to develop these panics in which he felt like a lost child, anxious to flee, but without a goal or any sense of security because he could not flee to the only comfort that he knew. His panic was interpreted to him in this way, and his fear assumed a finite simplicity which could be understood and reckoned with, and whenever it recurred it was reassociated with the desire for his mother and he was thus enabled to make a conscious readjustment to the demands of life.

It is sometimes quite remarkable the way in which such suggested interpretation will have an almost instantaneous effect in the removal of symptoms.

A patient, aged 35, who had been in the habit of having attacks of enuresis whilst shaving in the morning, never had them again at this time after he was asked to consider the significance of shaving in relation to manhood, although they afterwards occurred at other times of the day.

For a year a man of 40 complained of pain in the foot which had resisted all his physician's attempts at alleviation, until it was reassociated with its cause in a very violent quarrel with his wife, who "hurt his feelings" by slamming the bedroom door against his stockinged toe, keeping him for the night on the wrong side of it.

It is like playing "noughts and crosses," sometimes the patient getting as far as OO when the analyst's interpretation puts the X against that particular symptom, and the patient then starts off OO again on another line, to be checked as before, until the motive disappears.

All symptoms may thus be made the material of explanation, interpretation, and re-education. Dreams were described by Freud as the *via regia* to the unconscious, but it would seem an unnecessary limitation and an exaggeration of the importance of dreams as such, to suggest that they were all-important in a patient's analysis. His whole behaviour, symptomatic and everyday, may be motivated from the same unconscious feeling sources, and his political or religious opinions, gestures, mannerisms, and daily habits may all be used as analytic material.

When are we to regard the patient as being cured? Is "cure" something which is necessarily final or complete, or is it something relative and only partial? Our answers to these questions must depend upon the answer which we choose to give to the question which has been asked already—namely, whether we are trying to remove the patient's undesirable *symptoms*, or whether we are also trying to show him *the way to live*. It may be said that the latter is not the doctor's task, that it is the task of priest or philosopher, but not of physician. However, to attempt to cure the symptom is so often found to involve the whole problem of the patient's attitude towards life that it is not always possible thus to limit the rôle of the physician to the cure of symptoms. It must be added also that perhaps the doctor's task is made more difficult by the fact that priests and philosophers themselves may be amongst those most subject to and activated by unconscious motives. The physician is therefore wise who regards his task from the unlimited point of view and who is content to show the way, sending his patient forward on the adventure of life without any finality or completeness of achievement.

RESISTANCE.

It is not for nothing that consciousness is resistant to "such stuff as dreams are made on." Consciousness is the check upon impulse and is the seat of conscience and inhibition. Conflict and resistance between the two are automatic and inevitable until such time as they have been resolved by analysis and adaptation. It is for this reason that psychological medicine will have many detractors amongst those who have developed a conscious (but yet unconsciously motivated) defence against their own unconscious motives and mechanisms. But the phenomena of resistance must inevitably occur in any analysis, and there will come times when the patient's attitude towards his treatment and his physician becomes definitely antagonistic. These will occur, either to prevent him from recognising unconscious wishes or, and more severely, when the gratification of those unconscious wishes is becoming threatened. Rationalisation will come to his aid, and he will say that the treatment is doing him more harm than good, that his doctor is incompetent, that he cannot afford further treatment, that he is too busy, and in fact his "need" to stop the treatment will be shown by the multiplicity of his excuses. He may then go to see another doctor, who is very liable to fall into the trap, because of his own unconscious resistance, and say: "Of course, I told you so. Psycho-analysis (*sic*) is all nonsense." If not the doctor, there are always relatives to be

SPECIAL ARTICLES

AN EXTENSIVE EPIDEMIC OF CATARRHAL JAUNDICE.

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THE epidemic here described was investigated in the course of work carried out for the Committee of the Medical Research Council for investigation into epidemics in schools. The Committee, under the chairmanship of Sir George Newman, with the assistance of some 30 of the great public schools, began the systematic collection of information in January, 1930, and the present intention is to continue the inquiry for several years, and to issue a report on the work at the end of that period.

This epidemic of catarrhal jaundice is of interest for it appears to be one of the most extensive described in this country, whilst it is the first known to attack a large public school, and, moreover, it affords evidence strongly suggesting that the disease is spread by nasopharyngeal "droplet" infection. The publication of a preliminary note upon it therefore seemed justified.

Course of the Epidemic.

The epidemic occurred in a small country town of some 6000 inhabitants. Here are situated three boarding schools: one for boys, with seven houses and some 400 boys; the second, a preparatory school with 40 boarders and 10 day boys; and, thirdly, a large boarding school for girls, also on the house system, with 250 girls. The latter stands well away from the town on rising ground; the girls are housed in five modern separate houses and all sleep in cubicles. This school escaped entirely from the epidemic, with the exception of one mistress, who developed the disease just at the end of term, but both the boys' school and the preparatory boys' school were attacked, a quarter of their boys sickening in each case.

These three schools are participating in the school epidemic inquiry and send weekly reports of all cases of sickness, so that an accurate record of the spread of any infection is possible.

In addition there are in the town two secondary schools for girls, both mainly day schools, but both with a few boarders; there is also a kindergarten school and a number of elementary day schools. A few cases of jaundice occurred amongst the pupils of all these schools.

Previous to March, 1930, the town had been free of the disease for many years. The medical officer of health informed us that there had been, 17 years before, an epidemic at a village a mile and a half away, in which he had taken great interest. For this reason, and also because he and his partner have an extensive practice, he is sure that he could not have missed any epidemic prevalence had it occurred, although the disease is not notifiable.

The first cases, alike in town and school, seem to have occurred in March, but were regarded as ordinary sporadic cases of simple catarrhal jaundice. Two boys from one house (A) were admitted to the school sanatorium, the first on March 4th and the second on the 10th. A master in another house had jaundice on the 3rd. It is interesting to note that the brother of the first case, also a boy in the same house (A), had the disease in the Easter holidays. In the town, two cases in adults are known to have occurred on March 8th and 13th, there being no apparent connexion between the cases. The next two known cases in the town occurred on May 10th and 12th; in the last week in May six cases in children of various families were seen in the town by one doctor, whilst another doctor saw a family of four children, who all fell sick on the 26th. At the same time another family living opposite on the other side of the road is known to have been infected, but so mild was the disease that no doctor was consulted. In all, up to July 25th these two doctors had seen altogether some 30 cases in the town, whilst a third doctor estimated that he had seen about 100 cases (in the town), mostly children attending elementary schools. It seems probable that (in the town) the number of patients who did not consult a doctor were at least as numerous as those who did, and that the total number of cases in the town which occurred before the outbreak in the school may have been between 200 and 300. The disease was uniformly mild, adult patients constituting perhaps one-fifth of the total number.

Outbreak in the Boys' School in the Summer Term.

It has already been stated that two boys of one house (A) had jaundice in March, and that another boy from the same house had the disease in the Easter holidays. During the first half of the summer term the health of the whole school was exceptionally good. The first case occurred in the same house (A), one boy being admitted to the sanatorium on June 10th with jaundice. He showed no pyrexia, and was regarded as a case of simple catarrhal jaundice, being discharged on the 30th. Between the admission of the jaundice case on June 10th and July 3rd 11 cases of tonsillitis (8 from A House) were admitted to the sanatorium. One of these boys admitted with tonsillitis on the 3rd was discharged on the 7th, and readmitted on the 13th with well-marked jaundice. Six cases of chicken-pox occurred in another house, but this disease did not spread and apparently had no relation to the jaundice. The first fortnight of July was remarkably fine and hot, and there was hardly any sickness in the school, but on July 14th the epidemic began, 13 boys falling sick on the 14th, 13 on the 15th, and 9 on the 16th. In all, some 95 cases—an attack-rate of 24 per cent.—were reported in the big school.

The onset of epidemic catarrhal jaundice is generally with a mild pyrexia, and as the jaundice does not usually develop until the fifth or sixth day after the onset, it was almost inevitable that at the beginning of the epidemic in the school the diagnosis would not be immediately made, but that the patients should be admitted with various diagnoses such as tonsillitis and gastric influenza (owing to the large number of cases in which vomiting occurred). An almost identical attack-rate, 25 per cent., affected the boys in the preparatory school, the boys of which attend the school chapel on Sundays and use the school swimming bath.

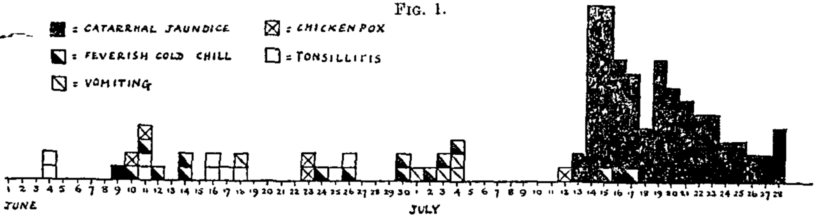
The first case here developed on June 28th in a boy (E), the next case occurred on July 6th, the patient (M) sleeping in the next bed but one to the first. In all, 10 boarders out of 40 had the disease (in the preparatory school) as well as one day boy out of ten, and one resident master.

Clinical Features.

This mild *catarrhal* jaundice was first clearly distinguished from the much more severe disease, now known as Weil's disease or spirochætal jaundice, by Cockagne. An admirable account of its clinical symptoms and epidemiology is given in the recent report of the Ministry of Health[*] by Dr. Morgan and Dr. Brown, and so it seems unnecessary to describe at length the clinical type of cases in this epidemic, which closely resembled those described in Dr. Morgan's report, but the following summary of the clinical features of the cases seen in the boys' school may perhaps be convenient. The disease was uniformly mild. The period from infection to the initial pyrexia (or the true *incubation* period) seemed generally to be about three or four days, the icterus appearing some five or six days after the initial pyrexia, or eight to ten days after infection.[†] The attack was, as a rule, ushered in by a *pyrexia* lasting for three to five days, similar to that of a mild attack of influenza, often with a secondary peak about the third day. In some six cases in the school sanatorium the temperature reached 103°, but more usually it was about 101° on the first day. Perhaps in one-sixth of the cases the onset was accompanied by a slight *rigor*, but in most, malaise, *headache*, and anorexia were the first symptoms. In the earlier cases *tonsillitis* was the initial sign, but was not a common symptom in the later cases. *Nausea* was common, and *vomiting* occurred in probably half the cases. *Discomfort* (hardly amounting to pain) in the upper part of the abdomen was very common. *Constipation* was usual, but in two or three cases in the town diarrhœa occurred. Icterus, generally slight and of an orange tint, was first noticed about the fifth or sixth day. The conjunctivæ were generally noticeably yellow before the skin. The urine showed the bile-pigment well in most cases, but was not heavily loaded with it, and cleared rapidly. The duration of the jaundice varied from a few days to two or three weeks. The liver was in many cases sufficiently enlarged to be palpable, and in two or three cases the *gall-bladder* was palpable. The *spleen* was enlarged in one or two cases.

Rashes.—Cases of urticaria occurred in three boys occupying the same study, one case being six days before the other two, which occurred simultaneously. In one of the latter cases the patient developed jaundice. Rashes occurred in two or three other cases, one boy having a profuse rash resembling that of German measles.

FIG. 1.



Transmission of Infection.

Largely, no doubt, because no considerable number of cases occurred in any large institution, Dr. Morgan *in his report was unable to satisfy himself* as to the mode of transmission of infection.[‡] He says: "If the spread is by direct contact, what is the actual type of contact likely to be? It was assumed that the infection was conveyed by means of linen, clothing, or even the hands and other parts of the body, which were soiled by the excreta (the urine or the fæces) of the infective person." It is therefore one of the chief points of interest in the epidemic here described that it appears strongly to suggest that the method of transmission was by nasopharyngeal infection.

Fig. 1 shows the daily incidence of the cases. The sudden rise on July 14th suggests that infection was conveyed in one of three ways, either, that is, by (1) water, (2) milk, or (3) nasopharyngeal infection Food transmission other than by milk may be considered unlikely, for boys of all the seven houses and of the preparatory school were affected, and all food other than milk is separately prepared in each house. As will be shown later, drinking water or milk transmission can be definitely excluded. *Swimming-bath water transmission* will also be considered later, and whilst it possibly may have been an accessory factor, it is unlikely to have had much importance.

The curve of incidence closely resembles that of influenza epidemics in this and other schools of similar type, both as shown in the diagram for the whole school, and in the individual houses, whilst the *dormitory distribution is most suggestive of* droplet infection alike in the big school and in the preparatory school. The familial distribution of cases already mentioned in the town also pointed to droplet infection, as did especially the circumstances in one hospital in-patient case, in which infection appeared to be associated with the operation of enucleation of the tonsils.

Transmission of infection either by the water or the milk-supply can be excluded with some certainty as will be seen from this Table.

School.	Water-supply.	Milk-supply.	Pupils attack-rate.
Boys.	Town-supply.	Pasteurised, from Mr. B of Z.	24 per cent.
Preparatory.	" "	"Certified," from Major A of X.	25 per cent.
Girls.	" "	Pasteurised, from Mr. B of Z.	Nil.[*]

[*] 1 mistress infected in the town.

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[*] Report of Public Health and Medical Subjects, No. 42, H.M. Stationery Office, 1927.

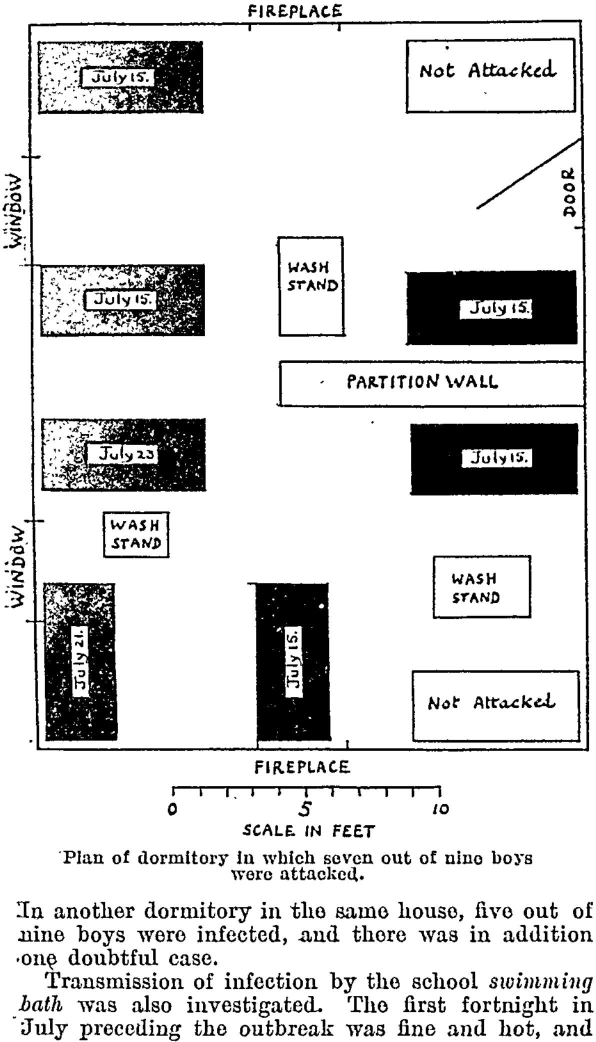
[†] One little girl who had been staying in the town developed icterus 20 days after leaving the town. There seemed in this case no likelihood of infection during the 20 days.

[‡] Dr. Morgan, however, records an instance where four cases occurred in a large boarding school for girls at Newbury.

The boys' school is one in which the seven houses are widely separated. All meals are taken in the houses, and the boys meet boys of other houses in class, games, swimming bath, and chapel. Investigations made during three epidemics of influenza showed that there were wide differences in the attack-rates of various houses and a similar difference was seen in the present epidemic.

Fig. 2 shows the bed plan of one dormitory in which seven boys out of a total of nine were infected.

FIG. 2.



Plan of dormitory in which seven out of nine boys were attacked.

In another dormitory in the same house, five out of nine boys were infected, and there was in addition one doubtful case.

Transmission of infection by the school *swimming bath* was also investigated. The first fortnight in July preceding the outbreak was fine and hot, and many boys bathed. The bath is used both by the big school and by the boys of the preparatory, and it is not surprising that many boys gave a history of frequent swimming up to the time of onset.

The bath is a fine open-air one with a good concrete pool of perhaps 100,000 gallons. It is filled three or four times a term and is treated intermittently with Voxsan (a proprietary solution containing about 11 per cent. of free chlorine) under the directions of one of the science masters. There is no filtration or heating, but in the hot weather in the first part of July the water rose to 72°.

In such a pool with only intermittent chlorination and infrequent change of water, it is difficult altogether to exclude the possibility of the bath water being a vehicle of transmission, but it is doubtful if it was an important factor. A fair number of the boy patients had not used the bath for some time before onset, and the bath obviously had no relation to any of the numerous "town" cases. The pupils of the girls' school do not swim during term time.

The possibility of *rat-borne infection* was considered. Two of the houses which suffered most severely are old buildings, probably easily accessible to rats, but it was stated that rats had not been seen. Drinking water is said always to be taken from main taps, so that the possibility of tanks being infected by rats should not arise.

Two points were specially investigated, the first being whether mumps conferred any immunity to epidemic catarrhal jaundice, and the second whether enucleation of the tonsils had any influence upon the incidence of the disease. With regard to the former question which arose from the circumstances of one or two cases where it seemed a possibility and in view of the fact that jaundice is occasionally a complication of mumps, of 89 patients with jaundice in which the history of previous infectious diseases was clear, 37 (41 per cent.) had had mumps, and 52 (59 per cent.) had not. From this and from other circumstances which need not be detailed, it seemed improbable that mumps confers any immunity; and as 44 boys out of a total of 89 with jaundice were known to have had their tonsils removed, it is obvious that the question of enucleation had not diminished the incidence to any significant extent.

Another point of interest is that on July 24th a party of 57 Country Holiday Fund children arrived from London for a fortnight's holiday in selected houses in the town; they left on August 7th, being followed the same day by another party of 60 children, also from London, who left on the 21st. The medical officers of health of the districts from which these children came were informed, but in no instance are any of these 117 London children known to have developed the disease.

Cases in the town ceased about the middle of August, the last cases resembling those with which the epidemic began. In these the patients did not develop icterus. No case occurred in the schools during the Christmas term.

Dr. F. Griffith kindly examined bacteriologically swabs from the throats of ten boys in the earlier stages of the disease, and the urine of two patients with pronounced icterus, but nothing significant was found.

Summary.

1. This epidemic of mild catarrhal jaundice began with sporadic cases, alike in school and town, in March, 1930. There was a definite epidemic prevalence in the town in the last two weeks of May, and the disease continued epidemic in the town throughout June and July, ending in the second week of August with a few atypical cases of tonsillitis. In the boys' school two boys and one master had the disease in the Lent term, and at least one boy in the Easter holidays. All these boys came from house A in which the first case of the summer term occurred on June 9th. In the last days of June there were 11 cases of tonsillitis admitted to the sanatorium, eight of which came from house A. These cases of tonsillitis were probably associated with the outbreak but this is not certain, although one at least of these boys subsequently developed jaundice. Then, after a fortnight with no obvious infection, there was a sharp outbreak beginning on July 13th, the attack-rate both in the school and in the preparatory school being about 25 per cent.

2. The type of the disease was mild and similar

to that of the epidemics of 1925 described by Dr. Morgan.

3. The incubation period is difficult to estimate, but it probably lasts some four days. The difficulty is increased by the fact that in some of the milder cases the preliminary pyrexial onset is either altogether absent, or unnoticed, and jaundice, which clearly develops from four to six days after the initial pyrexial onset, is the first symptom noticed. This may suggest that the incubation period is longer than it really is. In many instances, where longer incubation periods are arrived at, the possibility of the occurrence of missed cases or of symptomless infection of healthy carriers must be borne in mind.

4. Headache, anorexia, and malaise ("feeling like mud" as one of the boys described it) are the most constant symptoms, but pains in the upper abdomen and vomiting occur in more than half the cases. About one-sixth have a slight initial rigor. The liver is moderately enlarged, the gall-bladder in a small percentage is palpable. Constipation is usual, but diarrhœa may occur. No complications were observed. Patients are usually children or adolescents, but young adults make about 20 per cent. of the total.

5. The evidence in this epidemic appears strongly to suggest that transmission was usually by naso-pharyngeal "droplet" infection, and that it was favoured by intimate contact, especially in sleeping quarters.

6. That some cases were due to infection by swimming-bath water is possible. It is more likely that in the majority of these cases the initial pyrexia was noticed after and attributed to swimming.

7. The bacteriological examination of two specimens of urine and ten throat swabs by Dr. Griffith showed nothing abnormal.

NOTE.—Owing to the fact that the Committee of Investigation into Epidemics in Schools has given an undertaking that all reports shall be published in such a form that no school can be identified, it is not possible for us to mention their names when we gratefully acknowledge our indebtedness to the headmaster, school medical officers, and the practitioners in the town whose aid was invaluable in overcoming the difficulties of making an investigation in a great school just on the eve of its departure for the summer holiday and at the end of the school year.

MEDICINE AND THE LAW.

Solicitor Ejected from Coroner's Court.

THE ejectment of a solicitor from a coroner's court at Wembley last week is instructive. An inquest was being held upon the body of a man killed in a motor accident. A witness stated that he was sitting in the dickey seat of a car proceeding at between 15 and 20 miles an hour. He called out to the driver "mind the fence, Ben." The car crashed into the fence and turned over; the witness, his wife, and the driver were extricated from under the car. A solicitor, appearing presumably on behalf of the relatives of the deceased, asked the witness if the driver had had anything to drink at the Great Central Sports Pavilion from which the party had just come. The witness replied that he had had a glass of beer. The solicitor then began his next question, "*If the driver was drunk*"—when the coroner (Dr. Cohen) intervened. Asked by the coroner if he had any witnesses to call to prove the statement that the driver was drunk, the solicitor answered in the negative. The coroner thereupon declined to allow the question (which he described as most improper) to be put, and directed the solicitor to sit down. The solicitor refused and disputed the coroner's power to prevent him from asking questions. The coroner warned him that, if he did not sit down, he would be ordered to leave the court. After further protest and dispute of the coroner's powers, the solicitor was removed from the court. The coroner then adjourned the inquest in fairness to the family, to allow them to be represented by another advocate. He could not, he said, allow the suggestion that a man was drunk if there was no evidence to prove it.

There can be no doubt that the coroner has an absolute discretion in these matters. His court is a court of record and he can commit persons for contempt if the contempt is in the face of the court. No action lies against the judge of a court of record for an act done by him in his judicial capacity. No question arises under Section 6 of the Coroners Act of 1887 as to whether the incident amounts to "rejection of evidence, irregularity of proceedings, insufficiency of inquiry or otherwise" so as to make it desirable that another inquest be ordered by the High Court, for the Wembley inquest was adjourned and not concluded. As is well known, the coroner conducts his inquest in his own way. He himself calls the witnesses and examines them; if witnesses are afterwards asked questions by other persons, it is solely by his permission; he is justified in refusing if the questions are improper. The Wembley case was, like any other motoring accident, a case in which the sobriety of the driver might be a material element. The Road Traffic Act has recently made it pertinent in traffic cases to inquire not merely whether the driver was drunk but whether he was under the influence of drink to such an extent as to be incapable of having proper control of the vehicle. It is, however, contrary to the etiquette of advocacy as well as to the interests of justice to insinuate in the form of a question an allegation for which there is no foundation. In checking the advocate, and in asserting his own authority, the coroner was entirely right; in adjourning the inquest he was entirely wise. Coroners have, it may be added, a general power to exclude the public in general or any individual in particular from their courts. The authority usually cited for this power is the case of Garnett v. Ferrand, decided in 1827. Ferrand, a coroner for the county palatine of Lancaster, turned Garnett out of his court. Lord Tenterden, C.J., observed that Garnett seemed to have had neither any interest in the particular inquest nor any information to give as a witness; but this fact apparently made no difference to the coroner's discretionary power.

When the adjourned inquest was resumed on March 24th, Dr. Cohen cleared up the position by asking the witness the direct question: "Was the driver any the worse for drink?" The answer was in the negative. In addressing the jury, the coroner explained that he was now satisfied that at the previous hearing the solicitor had no intention to make his question the vehicle of an unfair suggestion; the wording of it had led to a misunderstanding.

"Nature Cure" Practitioner Criticised.

At a recent inquest at New Barnet a post-mortem examination showed that the deceased woman, aged 35, died of advanced tuberculosis of both lungs. Dr. O'Callaghan, giving this evidence, stated that she weighed only 5¼ st., whereas the normal weight of a woman of her height would have been 9 st. The husband of the deceased explained that his wife had from time to time consulted doctors about her health. They had advised her to continue with the diet which she was taking for indigestion

CORRESPONDENCE

THE OUT-PATIENT QUEUE.

To the Editor of THE LANCET.

SIR,—I see that in your leading article of March 14th (p. 595) it is stated that the appointment system has been tried with success at the King George Hospital, Ilford. It is true that the article goes on to say that this particular scheme implies such restriction in numbers that it would not be practicable in a big town. Further comments on the system are, however, required beyond this; for example: (1) the out-patient department at the King George Hospital, Ilford, is a consultative one. It does not, therefore, attempt to deal with patients in the same way as do the large general hospitals. (2) The total number of patients dealt with by this consultative out-patient department through the current week was 49 and this appears to be an average number. There is, therefore, no comparison at all possible between the out-patient department at Ilford and the out-patient departments at other hospitals. It should be perfectly simple to arrange by an appointment system for 49 patients per week, but it would be quite a different matter to arrange by appointment for the many hundreds who attend the out-patient departments at other hospitals.

The term "success" applied to the appointment system in Ilford requires very considerable modification. If only 49 out-patients are seen per week, the arrangement of appointments for this number of patients would be very difficult to make a failure. It can hardly be held that with such attendances the system has been a success in Ilford as far as supplying the needs of the huge area which the King George Hospital is supposed to serve is concerned, and I note that already modifications are contemplated in the Dagenham area. If with a satisfactory almoner system out-patient departments are still unwieldy, it is obvious that a bigger staff is required. The new Local Government Act should assist in providing more out-patient departments which will coöperate with hospitals overburdened.

It has to be remembered that voluntary hospitals are still maintained by charitable subscriptions and any attempt to limit their activities will have an immediate effect on the support accorded to them. Certainly the adoption of the batch or ticket system as mentioned in your article would improve matters.

I am, Sir, yours faithfully,

A. H. G. BURTON,
March 19th, 1931. Medical Officer of Health, Ilford.

"INVERTED FRANK BREECH."

To the Editor of THE LANCET.

SIR,—On Wednesday night, March 18th, I attended a lady who had had three previous normal full-time labours, all vertex presentations. I had previously seen her on Feb. 2nd, when the position was left occipital anterior and the head could be easily pressed into the pelvis. Pains began about 7 P.M. on March 17th. At 9 P.M. I made an abdominal examination; the vertex was over the brim, free, and I thought the back was behind. Except for one hour during the night pains were very slight till 2 P.M. on the 18th, when the strength and frequency increased. Just before 3 P.M. I made a vaginal examination; the cervix was three fingers dilated, the head very high in the left occipital posterior position, and the membranes bulging: the brim was not contracted, and the head was of normal size. At 4.20 P.M. the membranes ruptured. At 9 P.M. the head was still free, and as the pains had now been strong for seven hours I decided to examine under anæsthesia to find the cause of the obstruction, and if necessary, turn. The head was not pressed against the cervix, which projected down into the vagina, the dilatation being about the same as before. On introducing my finger into the cervix I found both feet lying over the brim just to the right of the head. I displaced the head into the left iliac fossa, pulled on the right foot, and brought it down. It was somewhat difficult to move the head up into the fundus owing to the small amount of liquor. I tied the foot by means of a bandage to the foot of the bed. About 10.30 P.M. the foot began to descend and the patient was reanæsthetised; delivery of the child alive (a male, weight 8 lb. 10 oz.) was effected without much difficulty. Progress of both has been so far satisfactory.

On looking through my records I find I have seen seven cases of complex presentation before this one. These eight cases occur in a total of 603 abnormal midwifery cases treated by me, and this was the only one in which the vertex and both feet were over the brim—i.e., an "inverted frank breech." I take it that it is a distinctly uncommon presentation.

It is perhaps noteworthy that this patient in her first pregnancy had an external cephalic version done for breech presentation about a month before term. In each subsequent pregnancy there has been, as is common, a breech presentation in the earlier months which has rectified itself some time before full term. In this pregnancy the presentation was a breech on Dec. 19th, but it changed spontaneously to a vertex before Feb. 2nd. Was it originally, one wonders, a frank breech and is this a usual result when a frank breech turns or is turned? Or does the child, as a rule, curl up its legs and adopt the normal flexed position? I think the second alternative is the more probable, seeing that the "inverted frank breech" is so rarely encountered, and I have seen one case where a primigravida was X rayed at the thirty-sixth week after an attempt at external cephalic version had failed, and the film showed a frank breech. She came into hospital in due course and had a normal vertex labour—i.e., she underwent spontaneous cephalic version of a frank breech and did not have an "inverted frank breech."

I should appreciate the views of your readers on what happens when a frank breech is turned and what may be the explanation of an "inverted frank breech." I am, Sir, yours faithfully,

Park-square, Leeds, March 21st, 1931. A. M. CLAYE.

DISSEMINATED SCLEROSIS.

To the Editor of THE LANCET.

SIR,—In the issue of the *British Medical Journal* for March 14th, the Halley-Stewart Trust set out their reasons for establishing, under the direction of Miss K. Chevassut, a new centre for the study of this disease. I am concerned only with that paragraph of the letter numbered 1, in which my name is mentioned. In her original paper in THE LANCET Miss Chevassut adequately acknowledged such help as I gave her. The Halley-Stewart Trustees, however, have mentioned my help to her in terms which might well suggest that I have taken an active part in Miss Chevassut's work. I desire to state that there is no foundation whatever for such a suggestion. Such help and information as I have given to Miss Chevassut has been confined to microscopical methods and to the use of an appliance devised for my own work on various viruses. Miss Chevassut has not, in any real sense, been "trained" by me. I have simply given to her such help and advice, on matters within my own competence, as I have given to many others in similar circumstances. If any comparison is permissible, my association with Dr. Carmichael's work in this field has been closer and more regular; it was carried out in large part at the National Institute for Medical Research, where my own work is done, and later at the National Hospital, Queen-square, where I visited him at regular, prearranged times.

I have received many inquiries concerning Miss Chevassut's work, which reveal an inclination to associate my name with it. I trust that this disclaimer will make it clear that I am neither entitled to claim credit, nor prepared to accept responsibility in connexion with it.

I am, Sir, yours faithfully,

J. E. BARNARD.

National Institute for Medical Research,
March 20th, 1931.

LYSOL IN OBSTETRICS.

To the Editor of THE LANCET.

SIR,—In the report of an examination of Marshall's Lysol, appearing in your issue of March 14th (p. 590), no reference is made to the use of lysol in obstetrics, and I should like to direct attention to this omission because the reliability of lysol in obstetric use has recently been called in question, and is a most important issue. In your report it is stated that a dilution of 1 in 100 is recommended for the patient's body, but the dilution recommended by the manufacturer for vaginal douches on the cartons is 1 in 400, presumably because stronger solutions are not tolerated; and no figures are given in the analysis published in THE LANCET for the disinfectant action of lysol in this dilution. I expect shortly to publish the results of a test of a series of germicides including lysols, with a view to determining their suitability for the prophylaxis of streptococcal infections. The distinction made in your report between *Streptococcus pyogenes* and *Streptococcus hæmolyticus* appears to call for explanation, as in the ordinary language of bacteriology these names are interchangeable.

I am, Sir, yours faithfully,

LAWRENCE P. GARROD.

St. Bartholomew's Hospital, March 16th, 1931.

EFFECT OF UNSPLIT OILS ON DIGESTION.

To the Editor of THE LANCET.

SIR,—An annotation under the heading Olive Oil and Digestion in your issue of March 7th (p. 537) reviews certain results of recent investigations which may possibly help us to understand the effects of liquid paraffin. It has been found that the introduction of olive oil into the stomach or duodenum definitely inhibits both the secretion of gastric juice and the contractions of the stomach musculature. I pointed out recently in your columns[1] that the action of liquid paraffin cannot be only lubricant, and that it is attended by some very undesirable effects, including stagnation of the oil in the stomach and cæcum, and repetition. It would appear that the delay in the stomach falls into line with the effects observed by the investigators of the action of olive oil, unless of course there is a difference in this respect between the action of mineral oil and a liquid fat such as olive oil. This appears unlikely because the olive oil not having passed the ampulla is not yet chemically split.

It is also found that olive oil causes a large flow of bile from the gall-bladder which has a laxative effect (e.g., as in infants, to whom olive oil is frequently administered by parents and others for this purpose). Again comparing the action of liquid paraffin it seems probable that part of the laxative, and at times irritant, effect of liquid paraffin is due to a discharge of bile into the duodenum. In the absence of experimental evidence to the contrary, and considering the resemblance between the physical properties of olive oil and liquid paraffin, such an assumption seems logical.

I am, Sir, yours faithfully,

L. J. GREEN.

High-road, South Tottenham, N., March 21st, 1931.

A SIMPLE METHOD FOR BLOOD CULTURE.

To the Editor of THE LANCET.

SIR,—Dr. McCartney's excellent description in your issue of March 14th (p. 583) of the device for the collection of blood for culture must appeal to everyone who has met with the difficulties he refers to when samples have to be sent by post or messenger; but he seems to be unaware of the fact that the identical method adopted by him has been in daily use for a considerable number of years. The screw-capped and rubber-diaphragmed bottle illustrated was patented by me a long time ago (British Patent 187900/22), and a spun variety of the same safety-cap has, for about ten years, been exclusively used by a well-known firm in this country for bottling vaccines prepared by them.

I am, Sir, yours faithfully,

EDWARD BURNET.

Harley-street, W., March 20th, 1931.

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—With reference to the article by Dr. W. G. Savage, in your issue of March 7th, I would suggest that all the troubles on the technical side of pasteurisation which he mentions may be entirely overcome by pasteurising the milk in the glass delivery bottles. This process secures the proper exposure of every particle of milk to the required temperature. The bottles after half an hour's pasteurisation should then be cooled to about 40° F. If this process were followed the risk of contamination before delivery to consumers is also eliminated. The method would also provide a complete answer to Mr. W. S. Stevens, M.R.C.V.S. (who writes in the same issue), if he fears that any of the septic poisoning, referred to in his letter, was caused from pasteurised milk.

I am Sir, yours faithfully,

ARTHUR G. ENOCK, M.I.Mech.E.,
Consulting Dairy Engineer.

Dutch House, Raglan-gardens, Wembley Park,
March 16th, 1931.

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[1] THE LANCET, 1930, ii., 771.

PARLIAM[illegible]D CONTRACT PRACTICE

NOTES [illegible] Doctor on April 1st.

[illegible] of Health has informed insurance [illegible]mittees that the new procedure to be followed by insured persons who desire to change their doctors will come into operation on April 1st. Under the new regulation an insured person whose name is already included in the list of a doctor, and who has not removed either temporarily or permanently out of the district in which that doctor has undertaken to treat insured persons, may transfer to the list of another doctor (*a*) at any time, as at present, with the consent of both doctors, or (*b*) at the end of the quarter provided that he has given at least one month's notice to the insurance committee. No change has been made in the existing regulation other than that indicated under (*b*), and it is expressly provided that notices of desire to transfer given by insured persons before the date when the new regulation comes into operation shall be dealt with as heretofore. Any insured person who gives one month's notice to the insurance committee will send his medical card to the committee, who will return the card to him with a slip (part A1) affixed and stamped so as to indicate the date on which transfer may be made. Until transfer is completed the insured person should apply to his present doctor for any necessary treatment. Insured persons who are using the present form of medical card will not be in possession of the new instructions as to change of doctor, and a notice explaining these instructions will be issued with any copies of the present form of medical card sent to insured persons in the interval before cards in the new form are issued. The notice proposed to be issued runs as follows:—

Notice to Insured Persons: Change of Doctor.

After April 1st, 1931, if you wish to change your doctor, and if you are still living in the district in which your present doctor practises, you should proceed as follows: Either: (1) You may, as before, transfer at any time with the consent of your present doctor and of the new doctor; in that case you must take your medical card to be signed by both doctors and leave it with the doctor to whom you wish to transfer; Or: (2) You may transfer at the end of March, June, September, or December, in any year, if you have first given notice to the insurance committee not later than the last day of February, May, August, or November, as the case may be.

If you wish to give notice, you should send a letter to the committee expressing your desire to transfer, together with your medical card. It is not necessary to inform the committee of the reasons why you wish to transfer, or of the name of the new doctor you propose to select. The card will be returned to you with a slip attached indicating the date on which the transfer may be made. You may then apply to any other doctor for acceptance, and, if he accepts you, you should leave your medical card with him. You should continue to apply to your present doctor for any treatment which you may require before the date on which you are able to transfer. You must secure acceptance by the new doctor *not later than* the date stamped on the slip, or you will not be able to transfer until the following quarter and after you have again given a month's notice to the insurance committee.

If you have not chosen a doctor, or if you have removed temporarily or permanently from the district in which your present doctor practises, it is not necessary for you to write to the insurance committee. You may take your medical card to any insurance doctor you wish to choose. If you are not in possession of a medical card you should complete a form of application (Form Med. 50) to be obtained at the nearest post-office, and send it to the Insurance committee.

Appliances for Insured Persons.

Under article 6 of the National Health Insurance medical benefit consolidated regulations of 1928, arrangement was made for the supply of certain appliances to insured patients other than the drugs and preparations included in the usual prescription. Part III (B) of the Drug Tariff issued by the Ministry of Health contains a list of these appliances with a table of the prices which panel chemists are entitled to charge for them. In this table appear various kinds of bandages, plasters, gauzes, hypodermic needles, splints, and standard dressings. Panel committees frequently receive inquiries from insurance practitioners whether this or that appliance may be ordered on the prescription. There is, for instance, at the present time considerable demand for medicated bandages in the treatment of indolent ulcers of the leg; these are not at present included in the drug tariff and must therefore be paid for by the patient. Panel committees take note of these inquiries, and when the demand is apparent they bring before the proper subcommittee a suggestion that the particular appliance should be added to the "special list of drugs and appliances excluded from those in respect of which a capitation rate is payable." If the subcommittee approves, a request is forwarded to the Insurance Acts Committee of the B.M.A., which in its turn approaches the Ministry stating that in its opinion such a specialty might with advantage be added to the special list. As soon as the article has been placed on the list the doctor may supply it to the patient direct, in which case he should render an account to the insurance committee on the panel prescription form, or he may order it from the chemist on a prescription form in the usual way.

At the instance of the Insurance Acts Committee liver extract for the treatment of pernicious anæmia has just been added to the special list of drugs.

Medical Men and Health Insurance Work.

In reply to a question addressed to him in the House of Commons last week, the Minister of Health, Mr. Greenwood, gave the total number of doctors undertaking national health insurance work, and the total amount paid to such doctors out of national health insurance funds for each year since 1912.

Number of Medical Practitioners undertaking National Health Insurance work in England and Wales during the years 1913–30.

1913 ..	12,674	1920 ..	11,620	1927 ..	14,952
1914 ..	12,808	1921 ..	12,216	1928 ..	15,269
1915 ..	12,675	1922 ..	12,531	1929 ..	15,503
1916 ..	12,321	1923 ..	12,862	1930 ..	15,750
1917 ..	11,984	1924 ..	13,211	At Jan. 1st, 1931..	15,703
1918 ..	11,675	1925 ..	13,823		
1919 ..	11,346	1926 ..	14,432		

Amounts paid from National Health Insurance Funds to Insurance Medical Practitioners in England and Wales during the years 1913–30.

	£		£		£
1913 ..	3,858,000	1919 ..	4,052,000	1925 ..	6,518,000
1914 ..	3,673,000	1920 ..	7,403,000	1926 ..	6,661,000
1915 ..	3,470,000	1921 ..	7,824,000	1927 ..	6,831,000
1916 ..	3,353,000	1922 ..	6,773,000	1928 ..	7,037,000
1917 ..	3,845,000	1923 ..	6,670,000	1929 ..	7,100,000
1918 ..	3,641,000	1924 ..	6,476,000	1930 ..	7,300,000

This gives £464 as the present average yield of a panel practice.

Pathological Services in London.

Hitherto laboratory services have only been obtainable by insured persons on payment of a private pathologist's ordinary fee or by going to a hospital. The London Panel Committee has now arranged with a group of pathologists to perform these services for insured persons or their dependants at an agreed reduced scale of fees. Responsibility for payment rests with the practitioner, who recovers it from the insured person. It should not be forgotten that some laboratory services are provided free by the local sanitary authority. There are 18 pathologists in London who are coöperating and the fees vary from 2s. for a hæmoglobin estimation to 30s. for a blood-sugar tolerance curve. Wassermann tests of blood or cerebro-spinal fluid, done in a batch of not less than 30, are charged 4s. each.

OBITUARY

ARTHUR HOPEWELL-SMITH, M.R.C.S., L.D.S. Eng.

THE unexpected death of Prof. Hopewell-Smith, at the age of 65, removes one of the foremost exponents of dental histology. He was born in 1865 in Lincolnshire, and after taking his medical and dental qualifications was successively assistant demonstrator in histology to the Charing Cross Medical School, and lecturer in dental anatomy and pathology to the National Dental Hospital. Thence he migrated to the Royal Dental Hospital, where he joined the staff as dental surgeon and lecturer in dental anatomy. He held this post until 1915 when he was appointed to the chair of dental histology in the University of Pennsylvania where he worked for 15 years. Last year he retired and returned to this country.

Hopewell-Smith began the study of dental histology at an early stage in his career and quickly became an expert of acknowledged eminence. He published two books on the subject, and these were generally regarded as valuable contributions to the normal and morbid histology of the teeth. In addition he published many papers in dental journals both here and in America. Only last year he read one before the British Dental Association on the problem of the pathological absorption of teeth and bone, in which he took the view that this process is not due to the action of osteoclasts, while his last contribution was a paper on enamel, read on his behalf before the Odontological Section of the Royal Society of Medicine a few weeks ago. His published work covered a wide range and there were few aspects of dental anatomy and pathology to which he had not made some contribution. During his tenure of the chair at Pennsylvania he paid several visits to this country and the large audiences which always gathered to listen to him testified to the affection in which he was held by his many friends and admirers in this country.

WILLIAM AYTON GOSTLING, M.D. Lond.

Dr. W. A. Gostling, who died on March 12th, aged 75, retired some ten years ago after over 30 years' practice in Worthing. After his retirement he went to the village of Slinfold, between Arundel and Chichester, but last year returned to Worthing.

Entering University College, London, Gostling had an unusually brilliant career. He early distinguished himself by obtaining first-class honours in anatomy at the B.Sc. examination in 1880. He was Cluff prizeman in 1881, and took the Filliter exhibition in pathological anatomy in the following year. He won the Atchison scholarship in 1883, in which year he also became M.R.C.S. In 1884 he took the degree of M.B. and B.S., both with honours; in 1885 he proceeded to the M.D., and subsequently he was elected a Fellow of University College. For a time he practised at Diss in Norfolk, from whence he went to Worthing. There he served the local hospital in an honorary capacity for nearly a quarter of a century.

IN ENGLAND AND ...sation of which has been associated ...ro-spinal fever. I am further MARCH 14... that the present procedure

Notifications.—The following ... the flow of recruits disease were notified during the wee... are, therefore, 171 (last week 227); scarlet fever, 1502; di... vaccina- 1003; enteric fever, 31; pneumonia, 2030 (last week, 2273); puerperal fever, 44; puerperal pyrexia, 117; cerebro-spinal fever, 59 (last week 73); acute poliomyelitis, 2; acute polio-encephalitis, 1; encephalitis lethargica, 12; continued fever, 1; dysentery, 17; ophthalmia neonatorum, 110. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 17th–18th was as follows: Small-pox, 192 under treatment, 2 under observation (last week 189 and 5 respectively); scarlet fever, 1352; diphtheria, 1803; enteric fever, 214; measles, 123; whooping-cough, 418; puerperal fever, 30 (plus 12 babies); encephalitis lethargica, 121; poliomyelitis, 2; "other diseases," 171. At St. Margaret's Hospital there were 11 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 84 (3) from measles, 6 (0) from scarlet fever, 48 (11) from whooping-cough, 34 (11) from diphtheria, 68 (19) from diarrhœa and enteritis under two years, and 417 (53) from influenza. The figures in parentheses are those for London itself.

Three deaths from meningococcal meningitis occurred in London, 1 under 1 year and 2 from 5 to 15 years. 20 fatal cases of measles were reported from Liverpool, 11 from Newcastle-on-Tyne, 7 from Birmingham, and 4 each from St. Helens and Cardiff. Liverpool reported 4 fatal cases of diphtheria, Tottenham 3. Deaths from influenza diminished again. The 364 fatal cases outside London are scattered over 90 great towns; 24 were reported from Bradford, 20 from Birmingham, 14 each from Bristol and Sheffield, and 10 each from Bath, Derby, and Burnley.

The number of stillbirths notified during the week was 323, corresponding to a rate of 47 per 1000 births), including 69 in London.

SOCIETY FOR CONSTRUCTIVE BIRTH CONTROL.—A dinner was held at the Ritz Hotel on March 17th to celebrate the tenth anniversary of the foundation by Mrs. Marie Stopes, D.Sc., of the Mothers' Clinic. The health of the guests was proposed by Dr. Mather Thomson, who emphasised the moral and intellectual force behind the movement, and was responded to by Mr. David Low, who pointed out that the question was not only social and moral but also political. "Mothers' Clinics for the World" was proposed by Sir Anthony Hope Hawkins, who changed the toast to "All Mothers and All Babies." He said that although the preventive side of the movement might at the moment be the most important, its ultimate object was not preventive but creative: not fewer mothers and fewer children, but fewer unfit mothers and fewer unhealthy children. It was a marvel that this object did not meet with universal acceptance. Prof. B. Malinowski, in seconding the toast, regretted that there were no contraceptive measures for the second childhood which he was rapidly approaching. The mother and the child, together with the institution of marriage, he said, were in great danger at the present time and the danger came from those who opposed birth control. "Constructive" was the key-word of this movement, which reconciled sex, love, sentiment, marriage, parenthood, and religion. Mrs. Henderson having responded, the secretary read messages from clinics in other countries, while Prof. Leuenbach, of Copenhagen, brought greetings from the World League for Sex Reform. Miss M. Royden proposed the health of "Our Pioneer Clinic." There were certain things in the movement, she said, for which any decent human being ought to stand. The first was its opposition to that strange desire of some people to direct the lives of others. It was still worse when these people enforced their wishes by that most disastrous of all methods—the withholding of knowledge. Another factor in it was the human side; she recalled her own midwifery experience when a woman had come into hospital for the ninth year in succession to have her ninth dead baby. Sir Arbuthnot Lane seconded the toast and said that he thought Marie Stopes deserved no pity for the number of her enemies because one's enemies were one's best advertisers. The Chairman, in reply, deplored her failure to make the world understand the meaning of the phrase "constructive birth control." They desired to control and not to prevent births, and their work was often concerned in enabling childless women to have babies.

MEDICAL NEWS

Society of Apothecaries of London.

At recent examinations the following candidates passed in the undermentioned subjects :—

Surgery.—G. I. Benjamin, Medical College, Madras, and Guy's Hosp. ; G. W. Hinchliff, St. Mary's Hosp. ; D. R. Rigg, Univ. of Sheffield ; E. S. St. John, Guy's Hosp. ; and R. S. Wale, King's Coll. Hosp.

Medicine.—W. A. Naidu, London Hosp. ; and R. S. Wale.

Forensic Medicine.—F. Brodahl, St. Bart.'s Hosp. ; G. C. Brown, St. Mary's Hosp. ; H. R. Fosbery, Middlesex Hosp. ; and R. S. Wale.

Midwifery.—A. J. P. Coetzee, London Hosp. ; H. W. Davies, St. Mary's Hosp. ; R. C. H. Ensor, Queen's Univ. of Belfast and Guy's Hosp. ; R. P. Huggins, Westminster Hosp. ; S. D. Jouhar, Univ. of Durham ; J. S. Lane, Univ. of Cambridge and Guy's Hosp. ; W. K. Scnarr, E. S. St. John, and S. H. Thaler, Guy's Hosp. ; and R. S. Wale.

The following candidates, having completed the Final Examination, are granted the Diploma of the Society entitling them to practise medicine, surgery, and midwifery :—G. W. Hinchliff, W. A. Naidu, D. R. Rigg, W. K. Schnarr, and R. S. Wale.

University of Liverpool.

At recent examinations the following candidates were successful :—

DIPLOMA IN PUBLIC HEALTH.

Part I.—A. C. Briffa, S. Canter, R. F. Corlett, W. A. Davies, J. Hatton, E. W. Jones, J. N. Parrington, L. G. Thomas, A. J. Walsh, F. J. Welton, and E. B. Whittingham.

DIPLOMA IN TROPICAL MEDICINE.

R. Behari, K. L. Bhambari, F. E. Camps, A. E. Carrol, P. E. J. Cutting, M. S. Eldin, E. R. Gauld, M. Kalra, E. W. H. Maass, H. A. Maniar, * K. T. Moir, R. C. Speirs, Dorothy M. H. Tripp, and J. Yunibandhu.

* Recommended for the Milne Medal.

DIPLOMA IN TROPICAL HYGIENE.

L. J. A. Loewenthal, J. E. D. Mendis, F. O'Driscoll, and J. K. Sung.

University of Dublin.

At recent examinations in the School of Physic, Trinity College, the following candidates were successful :—

MASTER IN OBSTETRIC SCIENCE.

S. H. Woods.

FINAL EXAMINATION FOR M.B., B.CH., AND B.A.O.

Part I.—Therapeutics, Hygiene, Pathology, &c. : S. N. Varian, C. J. Hassett, Martin Fallon, and G. F. Harris.

Part II.—Medicine : P. C. Cosgrove, Elizabeth K. Roberts, T. F. O'Donnell, Margaret D. Gregg, Annie E. Thompson, C. H. Hutchinson, P. H. Peacock, Marjorie L. Campbell, and W. A. Ryan. *Surgery* : Charles Bowesman, C. H. Adderley, P. C. Cosgrove, Samuel Levy, H. W. Dalton, C. M. Elliott, and J. E. R. Keyms. *Midwifery* : *D. S. Torrens, *G. A. Wray, *Brian O'Brien, *Joseph Miller, D. B. Bradshaw, J. L. Martin, H. S. Mason, H. J. Eustace, A. J. Harden, M. A. Shapiro, I. G. M'Intyre, A. D. Barber, O. W. S. FitzGerald, W. A. Ryan, E. F. Burton, J. B. Fleming, Dorothy R. R. Solomons, and P. W. O'Ryan.

* Passed on high marks.

Royal Society of Medicine.

The Society's house and library will be closed from Thursday, April 2nd, to Tuesday, April 7th, both days inclusive.

St. Andrew's Hospital, Dollis Hill.

The annual report shows that the 52 beds of 1928 had last year grown to 84, and that many applications for admission have had to be refused. During the year there were 1356 patients including a number of free cases who remained an average of 20 days. Although there is no out-patients' department the hospital was called upon to assist 273 cases of accident and urgency.

Fellowship of Medicine and Post-Graduate Medical Association.

A number of special courses have been arranged for after Easter. From April 13th to 18th the Prince of Wales's Hospital, in association with the North Middlesex Hospital, will hold an all-day course in gastro-enterology. An afternoon (and some evenings) course in Venereal Diseases will be given at the London Lock Hospital from April 13th to May 9th ; an all-day course in Diseases of the Chest at the Brompton Hospital *from April 20th to 25th* ; a morning course at the Hospital for Sick Children, and an afternoon course at the Infants' Hospital from April 27th to May 9th ; and an afternoon course in Psychological Medicine at the Maudsley Hospital from April 21st to May 30th. An intensive course at the Central London Throat, Nose and Ear Hospital from April 27th to May 23rd is divided into clinical, operative, "peroral," and pathological classes, all of which, except the clinical, are limited in numbers. Copies of all syllabuses and particulars of the general course may be had from the secretary of the Fellowship at 1, Wimpole-street, London, W.1.

West London Post-Graduate College.

The *summer session of this* post-graduate college opens on Wednesday, April 15th, and at 4.30 P.M. an introductory address will be delivered by Sir Henry Simson, the dean, on Post-graduate Medical Education, to which all medical practitioners are invited.

Auxiliary R.A.M.C. Funds.

The annual meeting of the members of the Auxiliary R.A.M.C. Funds will be held at 4.30 P.M. on Friday, April 17th, at 11, Chandos-street, Cavendish-square, W. 1, when the annual report will be presented and the officers and committee for the current year elected.

Hygiene and Nursing in the Tropics.

Over 40 people took part in the first course on this subject arranged by the County of London branch of the British Red Cross Society, and a second course will begin at 9, Chesham-street, Belgrave-square, London, S.W., on April 10th, continuing on Mondays, Wednesdays, and Fridays at 5.30 P.M.

Industrial Lighting.

Sir John Parsons, F.R.S., will preside at a lecture on Industrial Lighting to be given at the house of the Royal Society of Arts, John-street, Adelphi, London, at 8 P.M. on April 15th by Mr. D. R. Wilson, H.M. deputy chief inspector of factories.

City of London Maternity Hospital.

At the annual meeting last week it was stated that 9305 midwives and 15,827 maternity nurses had been trained at the institution. Last year the 1610 mothers who were admitted provided voluntarily a quarter of the hospital's income, which, however, fell short of the expenditure.

Married Medical Women on Hospital Staffs.

As recorded on p. 362 of our issue of Feb. 14th, the governors of Birmingham General Hospital some time ago resolved that married women should not be eligible for appointments on the medical staff, and that women members of the staff who marry during their tenure *of office* be required to resign "in view of the disorganisation of the work of the hospital which may be entailed owing to the demands of their domestic duties." Under the rules the resolution required to be confirmed at the next annual meeting, and when the question came up last week confirmation was refused by 22 votes to 20.

Medical Women's Federation, Scottish Eastern Association.

The annual dinner was held on March 13th in *the* Caledonian Hotel, Edinburgh, when Miss Gertrude Herzfeld presided over about 100 members and guests. Among the guests were Sir Norman Walker, Prof. E. Bramwell, Dr. Alice McLaren, Dr. John Guy, Dr. Mercer Watson, Mr. David Lees, Prof. and Mrs. Johnstone, Prof. F. A. E. Crew, and Dr. James Young.

Miss Herzfeld, in proposing the toast of "Our Guests," said that the question was sometimes asked why a Medical Women's Federation was required. One reason was because women were young in the profession and they were struggling against odds. They were also asked why they had a women's hospital. They had to, because *they* were not yet allowed into the Royal Infirmary, though they looked forward to the time when they would be. Women wanted to take their part in the profession as a whole with their men colleagues. Another criticism was that the women did not do anything to make them worthy of recognition. Medical women in Edinburgh were trying to do something, and spurred on by the example *of the* Marie Curie Hospital, they had decided to tackle the gynæcological aspect of radium treatment. They had formed a definite system of research, and had gained the recognition of the Medical Research Council.

Sir Norman Walker, replying, said that he had never found any difficulty in teaching mixed classes. It was only in coöperation that medical men and women would overcome the difficulties in front of them.

Prof. Bramwell also replied briefly. Dr. Elizabeth Hurdon spoke of the work of the Marie Curie Hospital.

Prof. Johnstone, proposing the toast of "The Cancer Research Committee of the Scottish Associations *of the* Medical Women's Federation," hoped they would have every possible success in their work. On behalf of his colleagues at the Royal Infirmary, he assured them that they welcomed coöperation, and would be glad to help in any way possible. He congratulated the committee on the selection of Miss Margaret Tod to control the work.

Hospital Farm.

In an address to the Rotary Club of Tooting Dr. R. Worth, medical superintendent of Springfield Mental Hospital, Upper Tooting, stated that the farm belonging to that institution is the only one in the Administrative County of London. The 46 cows supply all the milk consumed in the hospital, large crops of vegetables and fruit are grown, and many pigs bred.

Hospital Costs at Plymouth.

According to the estimates of the Plymouth public health committee the weekly cost per patient in the city hospital will be £1 15*s*. This low figure is officially explained by the size of the hospital (500 beds) and by the purchase in bulk on a coördinated contract of the whole of the provisions, drugs, and medical requirements of the city hospitals and the mental institution at Blackadon.

Appointments

GERRARD, E. . ., M.B. Manch., M.R.C.S. Eng., has been appointed Registrar and Assistant Surgical Officer of St. Mary's Hospitals, Manchester.

LAWRENCE, N. E., F.R.C.S. Eng., L.R.C.P. Lond., M.R.C.S., Orthopædic Registrar to Salford Royal Hospital.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL: STANSFIELD, F. R., M.B., B.S. Lond., Senr. Resident Medical Officer; GROSE, G. N., L.R.C.P. Lond., M.R.C.S., Asst. Resident Medical Officer; PARSONS, F. M., M.R.C.S., L.R.C.P. Lond., District Resident Medical Officer.

Certifying Surgeons under the Factory and Workshop Acts: BOWEN-JONES, E., L.R.C.P. Lond., M.R.C.S. (Northleach, Gloucester); HAYWARD, A. W., L.R.C.P. Lond., M.R.C.S. (Stock, Essex).

Vacancies

For further information refer to the advertisement columns.

Bedford County Hospital.—H.S. At rate of £175.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—H.P. and H.S. Each at rate of £100.

Birmingham City Babies' Hospital.—Jun. Res. M.O. At rate of £100.

Birmingham City Maternity and Child Welfare Dept.—Three Temp. M.O.'s. £10 per week.

Birmingham Ear and Throat Hospital, Edmund-street.—H.S. for Out-patient Dept. At rate of £150.

Bootle General Hospital.—Jun. H.S. At rate of £150.

Bradford Children's Hospital.—H.S., and H.P. Each £120.

Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.

Bristol University.—Lectureship in Physiology. £300–£400.

Bury Infirmary, Lancs.—H.S. to Special Depts. At rate of £200.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency Officer. Also H.P. Each at rate of £130.

Cardiff City Lodge Institution.—Second and Third Asst. M.O.'s. £490 and £150 respectively.

Carlisle, Cumberland Infirmary.—H.S. to Ear, Eye, &c. Dept. At rate of £155.

Charing Cross Hospital, W.C.—Med. Reg. £150.

Chester Royal Infirmary.—H.P. £150.

Chesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £150.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

Croydon General Hospital.—H.S. £125. Also Hon. Anæsthetist.

Derby, County Mental Hospital, Mickleover.—Med. Supt. £1200.

Dumfries, Crichton Royal Mental Hosp.—Asst. Physician. £350.

Durham, Earl's House Sanatorium.—M.O. £150.

Ealing Borough, Maternity and Child Welfare Services.—Asst. M.O. £450.

East Ham Memorial Hospital, Shrewsbury-road, E.—H.S. to Special Depts., and Cas. O. Each at rate of £120. Also H.P. At rate of £150.

Essex Administrative County.—Jun. Asst. County M.O.H. £500.

Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.

Gloucester, Gloucestershire Royal Infirmary, &c.—Res. Surg. O., and 1st H.S. At rate of £200 and £150 respectively.

Harrogate Royal Bath Hospital, &c.—H.P. At rate of £150.

Hastings, Royal East Sussex Hospital.—Temp. Res. Sen. H.S. At rate of £150.

Hospital for Consumption and Diseases [illegible] Chest, Brompton, S.W.—H.P. At rate of £50.

Hospital for Sick Children, Great Ormond-[illegible]t, W.C.—H.S. and H.P. Each at rate of £100.

Hull Royal Infirmary.—H.S. to Opth. and Ear, [illegible] and Throat Depts. At rate of £150.

Kincardine, County of.—Deputy M.O.H. £600.

Lancaster, County Mental Hospital.—Asst. M.O. £500.

Leamington Spa, Warneford General Hospital.—Res. H.P. £165.

Leeds, St. James's Hospital.—H.P. and S. £200.

Leicester Royal Infirmary.—Two Surgical Dressers. Each 10*s*. 6*d*. per week.

Leicestershire and Rutland [illegible]ntal Hospital, Narborough.—Asst. M.O. £350.

[illegible]verpool Stanley Hospi[illegible] H.P. and H.S. Each £100.

[illegible]ondon Jewish Hosp[illegible] Stepney-green, E.—Hon. Asst. P.

[illegible]ondon Light and El[illegible] Clinic, 42, Ranelagh-road, S.W.—Three Hon. Visit[illegible]cians.

Manchester, Ancoats Hospital.—H.S. At rate of £100.

Manchester Ear Hospital, Grosvenor-square, All Saints.—Non. Res. H.S. At rate of £150.

Manchester, Royal Children's Hospital, Pendlebury.—Res. Surg. O. At rate of £125.

Manchester Royal Infirmary, Central Branch, Roby-street.—H.S. At rate of £100–£200.

Manchester Royal Infirmary.—Dickinson Research Travelling Scholarship in Medicine. £300, and Dickinson Research Surgery Scholarships. £75.

Manchester, St. Mary's Hospitals.—Four H.S.'s. Each at rate of £50.

Morpeth, Stannington Sanatorium, Clifton.—Jun. Res. M.O. At rate of £100.

Newark General Hospital.—Res. H.S. £175.

Nottingham General Hospital.—Cas. O. At rate of £200.

Nuneaton General Hospital.—H.S. At rate of £120.

Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.

Oxford, Warneford Mental Hospital.—Asst. M.O. £300.

Paddington Green Children's Hospital, W.—H.P. Also H.S. Each at rate of £150.

Plymouth, South Devon and E. Cornwall Hospital.—H.S. At rate of £100.

Portsmouth Education Committee.—Asst. School M.O. £500.

Portsmouth Royal Hospital.—3rd H.S. Also Cas. O. At rate of £130 and £100 respectively.

Preston and County of Lancaster Royal Infirmary.—H.S. £150.

Prince of Wales's General Hospital, Tottenham, N.—Res. Sen. and Jun. H.P. and Special H.S. Each at rate of £120. Also Res. Jun. H.P. and Two Jun. H.S.'s. Each at rate of £90.

Radium Institute, Riding House-street, W.—Res. Surg. Reg. At rate of £250.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Rotherham Hospital.—Cas. H.S. £120. Hon. Surgeon to Ear, Nose and Throat Dept. Also Hon. Dental Surgeon to Out-patients' Depts.

Royal Free Hospital, Gray's Inn-road, W.C.—Res. Cas. O. £150.

Royal London Ophthalmic Hospital, City-road, E.C.—Sen. Res. O. At rate of £150.

Salford City Infectious Diseases Hosp.—Jun. Asst. Res. M.O. £200.

St. Helens Hospital.—H.S. £200.

St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Hon. Jun. Med. Reg.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—H.S. At rate of £75.

St. Mary Abbot's Hospital, Marloes-road, Kensington, W.—Asst. M.O. £350.

St. Mary, Islington Hospital, Highgate Hill, N.—Asst. M.O. £350.

Scunthorpe and District War Memorial Hospital.—Second Res. H.P. £150.

Shanghai Municipal Council—Public Health Dept.—Asst. Pathologist. 650 Tls per mensem.

Shrewsbury, Royal Salop Infirmary.—Res. H.S. and Res. H.P. Each at rate of £160.

Stafford, Staffordshire General Infirmary.—H.P. £150.

Stoke Newington Dispensary, High-street.—Res. M.O. £200.

Surrey County Sanatorium, Milford.—Third Asst. Res. M.O. £350.

Taunton, Taunton and Somerset Hospital.—H.P. £100.

Wallasey Victoria Central Hospital.—Jun. H.S. At rate of £100.

Walsall General Hospital.—H.S. At rate of £150.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. Res. H.S.'s, and Jun. H.S.'s. At rate of £150 and £100 respectively.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Rhayader (Radnor).

Births, Marriages, and Deaths

BIRTHS.

ARMITAGE.—On March 18th, 1931, at Elmfield Lodge, Headingley Leeds, the wife of George Armitage, M.C., Ch.M. (Leeds), F.R.C.S., of a daughter.

BISHOP.—On March 13th, the wife of G. S. Armitage Bishop, M.B., F.R.C.S.E., Whaley House, Melton Mowbray, of a son.

DAY.—On March 14th, at Robin Hill, Acle, Norfolk, the wife of Dr. George Day, of a daughter.

TUCKER.—On March 17th, to Ena Mildred Tucker, M.R.C.S., L.R.C.P., née Sansom, wife of Robert L. Tucker, Compayne-gardens, N.W.—a daughter.

MARRIAGES.

BARNETT—WILLIAMS.—On March 23rd, at St. Saviour's, Warwick-avenue, W., Dr. Maxwell Key Barnett, of Shirley-road, Southampton, to Dora, youngest daughter of Mr. and the late Mrs. E. Williams, of Bridgnorth.

LORD—CARR.—On March 21st, at the Church of St. Mary the Virgin, Chessington, Lieut.-Colonel John Robert Lord, C.B.E., M.D., F.R.C.P.E., to Dr. Ruby Thornton Carr, both of Horton, Epsom.

DEATHS.

COWLEY.—On March 23rd, at St. Thomas's Hospital, Alexander Cowley, M.B., of "Salruck," North Finchley.

FIRTH.—On March 17th, at St. Margaret's-road, Twickenham, Charles Firth, M.D., F.R.C.S., in his 82nd year.

POWELL.—On March 16th, at Buckleigh-road, Streatham, Henry Albert Powell, M.A. (Oxon.), M.R.C.S., &c.

THOMPSON.—On March 18th, at Tutshill, Chepstow, Dr. Cecil Charles Brandon Thompson, aged 55.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

SLEEPING SICKNESS IN AFRICA.

THE shortage of officers in the Royal Army Medical Corps, on which we commented in a leading article last week, gives a special significance to two recent papers on its work on sleeping sickness in Africa.

Writing on Three Years in Central Angoniland with the Sleeping Sickness Commission,[1] Major-General D. Harvey's avowed object is to show that the medical officer's duties in the Army in peace-time are not confined to sick parade and office work, but may include travel, sport, and scientific research, on which may depend the future of whole provinces of the Empire. General Harvey's commission went out to Nyasaland in 1911, in consequence of the detection of trypanosomiasis in that area, and its chief object was to discover the mosquito responsible, since *Glossina palpalis*—already recognised as the carrier in Uganda—was not known to exist in Nyasaland. The result of the commission's work was to show that *G. morsitans* was the carrier of a type of trypanosome identical with the Rhodesian type, and the story of the research is a fascinating one.

Even more interesting, perhaps, is Major G. K. Maurice's account of Sleeping Sickness in the Sudan.[2] The authorities there were fully alive to the danger, having been warned by the appalling results of the disease in Uganda, where the population of the lake district was reduced from 250,000 to 50,000, and the remainder had had to be evacuated entirely from the fly areas. In 1905 a commission, appointed for the purpose, made recommendations to prevent infected natives from crossing from the French and Belgian territory adjacent, but in spite of the cordon sanitaire which was established, some 70 cases occurred in the province of Bahr-el-Ghazal, though none of them was of Sudanese origin. By 1910 the Sudan could be said to be free from sleeping sickness.

In June, 1910, however, the Lado enclave was taken over from the Belgian Government and incorporated in the province of Mongalla. By 1913 547 cases had been detected and segregated in this area. Unfortunately, a fresh area of infection was discovered in 1914, coincidently with the depletion of the medical staff owing to the war. It was not until 1919 that a determined effort could be made to detect and segregate infected cases, and Major Maurice relates in detail the measures by which a handful of British and Syrian medical officers succeeded in stamping out the disease and, incidentally, transforming the appearance of the district and the habits of the natives. The plain account makes a thrilling story. The wastage among the British officers was very high. The first senior medical officer left the district worn out in mind and body and unfit to return; the second died three days after reaching Tembura; the third had his health permanently impaired by blackwater fever, while the fourth left the district suffering from repeated attacks of malaria at short intervals. In spite of this, settlements, roads, bicycles, and motor-cars were introduced, not because "any of us minded the discomforts of travel in unopened Africa, but because the discomforts were incompatible with the work which had to be done." By 1928 sleeping sickness had been eradicated in a district five times the size of Wales, by a staff which at no time exceeded one British and six Syrian medical officers, and was usually much less. In the course of the campaign the natives had lost their fear of the white man and had learnt to obey laws. "The task of extirpating a disease had profoundly affected the life of a people."

MEDICAL MEMBERS OF THE L.C.C.

IN the newly-elected London County Council the following seven members possess medical qualifications: Dr. C. W. Brook, N. Southwark (Lab.); Dr. Stella Churchill, S.E. Southwark (Lab.); Dr S. W. Jeger, Shoreditch (Lab.); Dr. Florence Barri Lambert, C.B.E., St. Geo. Westminster (Mun Ref.); Miss Esther Rickards, F.R.C.S. (Lab.) Dr. Adeline Roberts, St. Marylebone (Mun. Ref.) and Dr. Henry Robinson, N. Kensington (Mun. Ref. Miss Rickards is an alderman: Dr. Roberts Dr. Churchill have been re-elected. Dr. Lambe is chairman of the Central Public Health Committ and a member of the Midwives Acts Committee. D Roberts is chairman of the Mental Hospitals' Co mittee and a member of the Housing Committ Alderman Rickards is on the Public Health an Housing Committees. Dr. Churchill is on the Men Hospitals Committee. Dr. Robinson is on t Public Health, Parks, and Welfare of the Blin Committees. Dr. Jeger is on the Public Health Entertainments Committees. Dr. Brook is a mem of the Parks and Open Spaces Committee.

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[1] Jour. of R.A.M.C., May, 1930.

[2] Ibid., September and October, 1930.

WITH A POCKET LENS.

Dr. James Small's little book[1] is intended to ope up the vastly interesting region which lies betwee the microscopical and the naked eye. In 700 lin drawings and 200 descriptive paragraphs he set out what can be seen by any boy or girl with a go pocket lens magnifying ten times, the materi being arranged according to their seasonal availabilit All that is needed is a Coddington lens, a pair tweezers, an old razor blade, and a slip of stiff celluloi Dr. Small dedicates the book to two small child who wanted to see the insides of things, and it sho be of service in providing scope for the youthf inquirer of all ages.

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[1] Pocket-Lens Plant Lore, Month by Month. By Ja Small, D.Sc., F.L.S. London: J. and A. Churchill. 193 Pp. 224. 5s.

Medical Diary

Information to be included in this column should reach in proper form on Tuesday, and cannot appear if it reach us later than the first post on Wednesday morning.

SOCIETIES.

HUNTERIAN SOCIETY.

MONDAY, March 30th.—7.30 P.M. (at Simpson's Restaura 2 and 3, Bird-in-Hand-court, 77, Poultry, Cheapsid Dinner followed by a discussion on the Common Col Openers: Dr. E. P. Poulton and Dr. Oliver Heat

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, Hamme smith-road, W.

MONDAY, March 30th.—10 A.M., Gynæcological Wa Genito-Urinary Operations. Skin Department. 11 A. Surgical Ward Visit. 2 P.M., Surgical Ward Vi Operations. Medical, Surgical, Eye, and Gynæcologic Out-patients.

TUESDAY.—9.30 A.M., Operations. 11 A.M., Medical Wa Visit, Dental Department. 11 A.M., Throat Operatio 11.30 A.M., Surgical Demonstration. 2 P.M., Operatio Medical, Surgical, and Throat Out-patients.

WEDNESDAY, April 1st.—10 A.M., Medical Ward Vi Children's Medical Out-patients. 2 P.M., Operatio Medical, Surgical, and Eye Out-patients. 4.45 P. Venereal [illegible] Demonstration.

THURSDAY.—10 A.M., Neurological Department. 11.30 A. Fracture Demonstration. 2 P.M., Medical, Surgi Genito-urinary, and Eye Out-patients. 2.30 P. Operations.

HAMPSTEAD GENERAL AND NORTH-WEST LOND HOSPITAL.

WEDNESDAY, April 1st.—4 P.M., Dr. H. C. Semo Treatment of Minor Skin Affections.

MANCHESTER VICTORIA MEMORIAL JEWISH HO PITAL, Elizabeth-street.

WEDNESDAY, April 1st.—4.30 P.M., Mr. I. Blain: Comm Surgical Conditions and their Treatment in Gener Practice.

MANCHESTER ROYAL INFIRMARY POST-GRADUAT COURSE.

TUESDAY, March 31st.—4.15 P.M., Dr. E. D. Gray: X Ri [illegible] Examination of the Intes[illegible]